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The Training of Professional Pharmacologists

CHAUNCEY D. LEAKE
Vice-President, University of Texas Medical Branch
Galveston, Texas

Recently an informal conference was held to discuss the problems of training professional pharmacologists. At this conference there were present representatives from several pharmaceutical manufacturing concerns, various governmental agencies and medical schools from various parts of the country. The discussions were informal, spirited and broadly stimulating. The proceedings may be summarized under several heads: (1) the need for pharmacologists; (2) the character of training for professional pharmacologists; (3) the implications regarding the scope of pharmacology, and (4) the applications of pharmacology.

It was demonstrated clearly that there is a real and pressing need for pharmacologists. The pharmaceutical manufacturing houses demonstrated need for two types: (1) those who might be responsible for routine testing and assay, and (2) those who might undertake the direction and planning of fundamental or practical pharmacological problems. The governmental agencies indicated similar needs, and also demand for a third group of pharmacologists who might be concerned with examination and control of new drugs, and the promotion of research in connection with public health aspects of pharmacology.

As a rough estimate it appears that perhaps one thousand or so routine workers for control and assay jobs in industry are needed, and that, perhaps, one hundred or so more satisfactorily trained pharmacologists are required for the planning and direction of pharmacological research. Taking into account the pharmacologists already in service in universities, industry and government, it would appear as though there is need for an annual replacement, figured at around 5 per cent, of 50 to 75 people for control and assay work, and 25 to 30 better trained pharmacologists for university positions or for the planning and direction of pharmacology research.

This is, of course, a much larger number of pharmacologists than medical schools are prepared to furnish at the present time. It suggests a re-orientation of training methods in pharmacology and a deliberate planning on the part of pharmacology laboratories in universities to turn out the kind of people required.

TRAINING: It is clear from the need that two types of pharmacologists should be trained. The first may be considered as a vocational technician. They may be trained as Merck has done, directly from high school. This, however, is laborious and not wholly satisfactory. As an alternative, there might be a sort of graduate training for collegiate graduates in the special techniques of pharmacology. A university, for example, might offer a Master's Degree for a year's training in assay technique and in some of the more general biochemical and physiological techniques following a regular collegiate course with emphasis on chemistry and biology. This would probably not attract many students.

It might be wiser simply to set up a laboratory technician's course, and to extend the usual sort of laboratory technical training now given in the teaching hospitals of many medical schools, to include assay and other biochemical and physiological methods used in pharmacology. Such a laboratory technician would probably be more satisfactory than a collegiate graduate with a year of graduate work in pharmacological methods.

For the training of pharmacologists who are to plan and carry through research, one would think that the Ph.D. training program would be satisfactory. There is, however, much discussion regarding the importance of an M.D. degree for a pharmacologist. This, of course, is a reminder of the previous dependence of pharmacology on medicine, and an indication of the proposition that the chief application of pharmacology is in respect to medicine.

However, there are many objections to the M.D. training for a professional pharmacologist. In the first place, the collegiate training of the M.D. is not usually on a graduate level. Most medical schools accept students after three years of premedical training. For professional pharmacologists, four collegiate years are preferable. These should include collegiate work in English, with emphasis on semantics, logic, mathematics including calculus and elementary statistics, general physics, including some special work in electricity, a thorough grounding in chemistry, including quantitative organic and physical chemistry, and, then, biology to include not only general biology but also cytology, embryology, comparative anatomy, invertebrate zoology and general physiology.

The graduate training for the professional pharmacologist is admittedly arduous. In general, it is a combination of biochemistry and physiology, with additions. In general, it could quite properly include the first two years of medical training, but this should be modified. There is no need for heavy emphasis on anatomy. It would be wise to have the graduate training for professional pharmacologists include biochemistry, biophysics, physiology and microbiology, including bacteriology, parasitology, immunology and histology. After special training in pharmacology, there might also be some consideration of pathology. Obviously, the graduate training for the professional pharmacologist would have to extend over four academic years or three calendar years. During this time some degree of subsidy might be appropriate and necessary.

The M.D. who wishes to go into pharmacology is at a certain disadvantage in that he has to return to the pharmacology laboratory after he has received

his M.D. degree. This means that he has to come back and begin again the type of graduate training which is to be expected of him. While his general medical horizon may have been broadened, he may meanwhile have lost contact with other possible applications of pharmacology, which are becoming quite as important as in the field of medicine.

This all implies that the training of professional pharmacologists will probably develop on a general university level and become relatively independent of the medical school. This is in accord with the general tendency of the preclinical departments of the medical schools to develop on a general university basis. The principle is quite as important in the case of biochemistry and physiology as it is in the case of pharmacology.

SCOPE: These considerations raise the question regarding the status of pharmacology as a scientific discipline. It is peculiar in that it has no special physical technique of its own. It has, however, a very unique technical procedure of a rather difficult intellectual character. This is the process of bioassay, or of biological standardization. For the rest the technique of pharmacology is essentially that of biochemistry, biophysics, and physiology.

Pharmacology is generally considered to be the study of the action of chemicals on living things. This implies that the study may involve plant or animal material, and that the action studied may be beneficial or harmful. The implication is that the findings of pharmacological study may be advantageously applied not only to medicine, as is the traditional case, but also to other forms of health activity, agriculture, industrial hygiene, public health, law and sociology.

The particular scientific problems of importance in pharmacological study, as a scientific discipline, seem to have been historically developed as follows: (1) the elucidation of the relation between dose and effect and between time and concentration factors; (2) the localization of the site of action of drugs, which extends through all levels of biological organization, to include factors involving individual cells or groups of cells; (3) factors concerned in the absorption, distribution, fate, and the elimination or destruction of drugs in living tissue, involving considerations of permeability of natural membranes, intracellular physical-chemical factors, and other biophysical, biochemical and physiological considerations; (4) the relationship between physiochemical properties of chemicals and biological action (biochemorphology), and (5) the mechanism of pharmacological action.

APPLICATIONS: These scientific problems are peculiar to the scientific field generally referred to as pharmacology, and provide a broad base for the development of a unique scientific discipline. The knowledge obtained by such studies is widely applicable. It is important not only in all phases of medicine, whether in the diagnosis, prevention, cure, or treatment of disease, whether from a human or animal standpoint, thus involving the traditional fields of medicine, veterinary medicine, dentistry, nursing, and public health, but also including pharmacy and increasingly significant applications in agriculture,

entomology, industrial hygiene, toxicology, crime detection and such social problems as drug addiction and the use of alcohol and tobacco. Social control of various aspects of the use of drugs is becoming increasingly significant and is requiring expert supervision. For this supervision pharmacologists would seem to be best qualified.

There is thus no reason to take a defeatist attitude with respect to the present status and future development of pharmacology as a scientific discipline. This field is admittedly complex, and calls for increasing cooperation with various other specialties.

RECOMMENDATION: It may reasonably be recommended that university departments of pharmacology be prepared to approach the discipline in the broad manner implied by current developments; that departments of pharmacology in medical schools attempt to establish themselves on a university level, so as to include the training of professional pharmacologists in addition to the training of future physicians with regard to the sensible use of drugs in medical practice; and that professional pharmacologists attempt to develop more extensively the theoretical basis for their future experimental undertakings.

It is felt that these recommendations would provide a university background for meeting the current needs for professionally trained pharmacologists, and would assure the continued development of the discipline as a worthy and distinguished scientific field. Routine pharmacological technicians might appropriately be trained in laboratory technology in connection with the teaching hospitals of medical schools, but preferably in relation to the special techniques of the pharmacology laboratory, particularly in assay. For professional pharmacologists the Ph.D., training is recommended. For those desiring to apply pharmacology to medicine, and who may not be interested in other applications, the M.D. training may be preferable.

It is certain that a great service may be rendered to the development of pharmacology by the opportunity of conference discussion of current problems in the field.

The Use of the Dickinson Models in Obstetric and Gynecologic Education

ALLAN C. BARNES
Associate Professor, Obstetrics and Gynecology
The Ohio State University Medical School
Columbus, Ohio

Without doubt "The Dickinson Collection" is well enough known among obstetricians and gynecologists not to require extensive identification. In its entirety it is composed of more than 100 sculptured models portraying conception, pregnancy, labor and the puerperium. A portion of the collection was acquired a year ago by this medical school,[1] and the present note deals with the teaching uses and value of these models.

For the greater part of his 65 years in practice, Dr. Robert Latou Dickinson has been concerned with the graphic representation of human reproduction. The illustrator of his own writings, Dr. Dickinson has spent a considerable portion of his professional life making sketches and recording measurements both from patients and their X-rays. In 1939, he was joined in this effort by Abram Belskie, the artist-sculptor, and the present series of models is the result of their joint work since that time. The widely circulated "Birth Atlas" of the Maternity Center Association of New York is illustrated with photographs of these models, and the series on fetal development and the mechanism of labor were first exhibited at the New York World's Fair Hall of Man. The "Dickinson Model" for patient instruction in the use of the vaginal diaphragm is well known, as are many of the smaller items designed primarily for office use. The larger life sized sculptures, however, although of wider potential application, have never been employed as extensively. Nevertheless, their educational value, —particularly the twenty-five sculptures constituting the Birth Series,—is considerable, and they offer the first three dimensional representation of intrauterine growth and of delivery that has ever been made available for teaching purposes.

STUDENT INSTRUCTION: To state that the Mechanism of Labor is either easy to teach or easy to learn is to indicate that one has never tried to teach it or has learned it only partially. To grasp it fully at the first presentation would require a mind with unusual three dimensional vision, and it is a subject which, characteristically, must be retaught rather than simply taught.

In my experience, no two dimension teaching aids or mechanical models equal in instructional value these full scale sculptures depicting the process from the beginning of labor to the delivery of the shoulders. The motion picture can adequately record the external phenomenon of delivery,—restitution, external

1. The generosity of an anonymous donor made possible the purchase of these models from the Cleveland Health Museum, and enabled the Ohio State University College of Medicine to become the first school to own them.

rotation, delivery of the body,—but what the baby is doing before it comes within the range of the camera lens (or the obstetrician's eye) can only be visualized by serial saggital sections such as these. It is to this group of models that the students, both in medicine and in nursing, return most often for study.

PATIENT INSTRUCTION: Curiosity on the part of the prenatal patient and her husband as to the phenomenon of intrauterine growth is normal and natural, and demands honest interpretation and explanation. A part of the collection dealing with pregnancy is kept on display in the clinic, and serves to answer some of the questions of the antepartum patient. The authenticity of the studies aids immeasurably in prenatal education.

LAY INSTRUCTION: There is no reason for confining the demonstration of these models to members of the medical and nursing professions. They have a value in public instruction which should not be slighted. Some of them have already been loaned out for use in health education discussions in a nearby school, and arrangements have been made to bring high school students to see the entire group of sculptures. In addition, most of the collection is at present kept in a glass faced cabinet on a public corridor of the University Hospital where it has attracted considerable attention and continually excites favorable comment. Thus, it serves a museum function when not being used in the classroom.

CONCLUSION: The present brief note is designed simply to point out the educational usefulness of the Dickinson-Belskie sculptured models of human reproduction. The present availability of copies of these models provides us with teaching aids of unique value.

The Teaching of Clinical Neurology*

HAROLD G. WOLFF
Associate Professor of Medicine (Neurology) and Psychiatry
and
HENRY S. DUNNING
Assistant Professor of Clinical Medicine (Neurology)
Cornell University Medical College
New York, N. Y.

THE AIM

It is estimated that approximately 12 per cent of all patients[1] admitted to general hospitals have lesions involving the nervous system and in 14 per cent of all deaths[2] in the United States per year the nervous system presents structural defects. It is apparent, therefore, that knowledge of the function of the nervous system should be widespread. Perhaps even more important than the recognition of advanced and sometimes irreversible defects of the nervous system is the need for proper appraisal of that large group of persons who fear they have, or are suspected of having, structural defects of the brain.

Apart from these considerations, the discipline of neurology trains the student in observation and in the use of anatomy, physiology and pathology as a part of the logic to be applied to any given set of clinical observations. Furthermore, the organs and functions of the body are controlled and correlated by the nervous system both directly and indirectly through humoral agents in the blood and tissues. Neurology by the nature of its subject matter is thus not so much a specialty as a basic study.

In 1931, when the educational aims of the New York Hospital-Cornell University Medical College Association were being formulated, a survey of the teaching of neurology in this country, England and on the European Continent was undertaken by one of us (H. G. W.). His inferences from this study, which were supported by the faculty, were that a prime need to be filled by the new educational enterprise was the development of the teaching of neurology in a horizontal rather than in a vertical direction. By this is meant that a dynamic concept of nervous system function in health and disease should be spread throughout the undergraduate body of the school and the major departments of the hospital (medicine, surgery, obstetrics, pediatrics and psychiatry) instead of dealing with neurology as an isolated and highly specialized discipline, as is the proper aim in an "institute." It was felt to be important that

* From the New York Hospital and the Departments of Medicine (Neurology) and Psychiatry, Cornell University Medical College, New York, New York.

1. The morbidity statistics are based on data from St. Bartholomew's Hospital, London, England; from Bellevue Hospital, New York; and unpublished statistics of discharge diagnoses for the year 1936 from the New York Hospital, Departments of Medicine (12.8%) Surgery, exclusive of E.N.T., Eye and Urology (6.8%) and Pediatrics (17.7%)—average, 10.4%.

2. The mortality statistics were supplied by the Metropolitan Life Insurance Company, New York City, for the year 1930, registration area of 1920, for diseases of the nervous system. These figures are quoted from "Prevention of Diseases of the Nervous System," by H. G. Wolff, p. 895 in Blumer's Practitioner's Library, where further references may be found.

the *noli me tangere* attitude be replaced by an intelligent awareness of the function of the nervous system and a working relationship thereto on the part of all physicians.

The second major aim was to prepare a limited number of persons for careers in academic medicine as full time teachers and investigators. Lastly, it was considered desirable to train specialists for the practice of clinical neurology in the community, by affording suitable opportunities for graduate students.

To further these ends, the department of clinical neurology was made a division of the department of medicine with close connections with the division of neurosurgery. A full time teaching director of the subject was given a faculty appointment in the department of medicine, thus to remain closely attached to this department and to become a factor in shaping educational and administrative policies. Further, he was to assume responsibility for the entire medical service during a portion of each year.

By giving the director of the neurological service a faculty appointment in psychiatry as well, it was believed that his intimate relation through conferences and seminars with the psychiatric service would be fostered. Overspecialization was to be discouraged and all staff members were to be pressed to maintain their roots in a basic biological and medical soil.

Hence, the teaching of clinical neurology at the Cornell University Medical College was approached at four levels, each so specific in its requirements as to necessitate four different programs. The first involved the teaching of undergraduates; the second the instruction of members of the hospital house staff of the medical and other departments; the third the training of a few individuals for careers as teachers and investigators in clinical neurology or in the broad field of nervous system function as applied to disease states in general, and the fourth, the teaching of graduate students for specialization in neurology.

Since the problems of Cornell and the New York Hospital are germane to those of teaching centers in general, the following epitome of 15 years' experience in the training of undergraduates, medical interns and of teachers and investigators is herewith presented. Recently, additional training facilities have become available through affiliation with the Veterans Administration and through special funds from Foundations.

1. TEACHING OF UNDERGRADUATES

General Plan: In the first and second years of medical school, the student is prepared by the departments of anatomy, physiology and pathology to appreciate the form and function of the nervous system, and to recognize the gross and histological appearance of damaged nervous structures. In the second year, during the same trimester in which he is being trained in physical diagnosis, the student receives a comparable training in methods of neurological diagnosis. In the third year, emphasis is placed on the natural history of diseases of the nervous system and in the fourth year interest is focused on the management of patients with such defects.

A. Undergradates' Preclinical Phase: Because of the special interest of department heads or because preclinical department staff members hold appointments in the department of neurology, considerable energy is focused on the teaching of neuroanatomy, neurophysiology and neuropathology.

In the third trimester of their first year all undergraduate students experience 91 hours of laboratory work and demonstrations of the gross and microscopic anatomy of the nervous system. Each student dissects a brain and spinal cord and studies their miscroscopic anatomy in serial section. In addition, demonstrations are given of the experimental use of the oscilloscope; of action potentials in a mixed nerve and phases of nerve regeneration; of reflexes in the spinal cat; of arteriograms; of the use of the Horsley-Clark apparatus and effects upon the blood pressure and respiration of stimulation of the hypothalamus. Also demonstrated are the effects of deafferentation in a cat, and the effect of lesions in various portions of the cerebellum (department of anatomy).

During the first and second years there are 18 hours of lectures, and 48 hours of laboratory work in neurophysiology. Sixteen hours are devoted to experiments on human subjects (department of physiology). Each student ascertains the pain threshold of a fellow student, and measures, and is measured himself, for the ability to discriminate the intensity of pain sensation. The effect of analgesics on the pain threshold is also observed. In experiments on visual function, studies are made of accommodation, dark adaptation, color vision, visual fields for various colors and critical fusion frequency with spatial summation. Vestibular function and nystagmus are also studied. In experiments on auditory function, each student measures in a fellow student the audibility thresholds for tones from 600 to 10,000 vibrations per second. During the period of laboratory investigation of reflex patterns in animals (16 hours) normal and abnormal reflexes in patients with diseases of the nervous system are demonstrated.

The course in neuropathology consists of 11 one hour lectures, each followed by a two hour laboratory exercise. The neuropathologist (a member of the department of pathology), is also a member of the teaching staff of clinical neurology. Such exercises are offered in the second trimester of the second year. The lectures are illustrated with lantern slides of microscopic sections. In addition to the demonstrations of gross specimens, each student is given a box of 59 slides with representative stained microscopic sections of tissues illustrating important diseases of the nervous system. From 5 to 6 slides are studied during each two hour laboratory exercise.

B. Undergraduates' Clinical Phase:

1. *Teaching of Clinical Neurology in the Second Year:* With the basis of their training in neuroanatomy, neurophysiology and neuropathology, the undergraduate students begin the study of methods of neurological diagnosis in the third trimester of the second year. The pedagogic interest is focused on methods of eliciting evidence of disease of the nervous system at the bedside.

Since the brain, cord and nerves seldom can be examined directly, infer-

ences concerning them are derived from data about other systems. Skeletal muscle and sensory end organs have little autonomy and are uniquely dependent on neural activity. Hence, inferences concerning neural function are based on defects of muscle contraction and motility, smooth muscle and gland function, perception, mentation and personality. Simple skeletal muscle and sensory patterns are studied for evidence of defects in the lower integrative functions, whereas discriminative activities and life adjustments are indices of higher integrative functions. When the indicators of neural activity, namely the muscles and organs of perception in themselves become disordered, the sources of information become more limited and the data more difficult to interpret. An outline of examination based on these conceptions was prepared to promote proficiency in neurological diagnosis.

The class of approximately 75 students in 4 sections, each of 18 to 20 students, devotes one 2 hour session a week at the bedside for 11 weeks. Sections are divided into groups of 2, with one instructor for every 4 to 6 students. During the first 2 sessions, which are conducted at the New York Hospital in a series of small examining rooms, 2 or 3 pairs of students examine each other under the supervision of an instructor and according to a carefully organized outline of neurological examination. The purpose is to familiarize the student with the normal neurological status and the technics of examination. The students are urged to examine each other repeatedly in the interval between these weekly sessions, so as to familiarize themselves with procedures and variations in normal responses. They also become prepared to approach a patient without excessive reference to the outline of examination.

During each of the following nine sessions on the neurological wards of Bellevue Hospital, one pair of students is assigned to a patient. These two students on successive weeks alternate as examiner and assistant, but each student after every session is required to submit a detailed and comprehensive written report of the neurological findings on each patient with drawings to illustrate the nerve pathways and structures involved. Reports are corrected and graded by the instructor and returned to the student.

During this period of 11 weeks of bedside teaching, the entire class meets once a week for a one-hour lecture on the origin of signs and symptoms of diseases of the nervous system. The first lecture introduces the problem of disease of the nervous system, and the meaning of clinical procedures. The second, third and fourth lectures provide a review of neuroanatomy and an orderly concept of the signs to be observed and of the nerve pathways and structures involved in various specific lesions of the nervous system. The remaining lectures are concerned with discussions illustrated by patients and moving picture demonstrations of: motility function, visual fields, spinal fluid and manomatrics, brain tumor manifestations, headache mechanisms, the significance of convulsions, the disorders of language and of the highest integrative functions.

At the first lecture each student is given a mimeographed list of about 100 questions called "Irreducible Minimum of Information Essential to an In-

telligent Understanding of Disease of the Nervous System." The student is informed that the questions on the final examination which closes the course are chosen from this comprehensive list. Each student is painstakingly evaluated in terms of his bedside work, the clarity and precision of his protocols, his temperamental fitness for his task as a physician and, lastly, his performance on a written and on a bedside examination. This final grade in neurological diagnosis constitutes one quarter of the total final grade in second year medicine.

2. *Teaching of Clinical Neurology in the Third Year:* During the "medical" trimester of the third year the students work for the first time on the neurological pavilion of the New York Hospital. The pavilion is conducted in close connection with the department of neurosurgery, and contains 29 beds for neurological non-private inpatients, who number between 500 and 600 a year. Neurological patients, when ready for operation, are transferred to a surgical pavilion where they remain as long as surgical treatment is necessary. They then return to the neurological pavilion from whence, after evaluation, they are discharged to the neurological outpatient department.

The class is divided into 3 sections, each section of 25 students spending a trimester (12 weeks) in the clinical clerkship on the medical and neurological pavilions. Rotating groups of 6 students serve on the neurological pavilion where they function as clinical clerks for periods of 3 weeks each. Students assigned to patients with neurological disorders present them to the section at weekly 1 hour sessions under the supervision of the attending neurologist. The clinical problems of 6 patients are reviewed each week. The students conduct these conferences, present the histories, and demonstrate the defects. They are instructed in the recognition and evaluation of the role of life situations and emotional attitudes in the illnesses of their patients. The written history and examination protocols are carefully reviewed by the house staff and by the tutor of the students. The corrected students' anamneses are included in the permanent hospital records of the patients. The students are guided by mimeographed sheets of questions designed to indicate the kind of information one is expected to accumulate during the third and fourth years of medical training. This list also includes pertinent questions which have appeared on State and National Board examinations. At the end of the trimester the section is examined orally and each student is individually evaluated on bedside work, case presentations and character qualities.

3. *Teaching of Clinical Neurology in the Fourth Year:* Teaching in the fourth year is accomplished in the neurological outpatient department. In the neurological outpatient department there are admitted per year between 900 and 1,000 new patients. There are, moreover, approximately 3,500 visits during 150 clinic sessions per year. This department is organized so that physicians, surgeons, psychiatrists and pediatricians can work side by side, sharing the clinical responsibilities, their activities being supervised by the neurologists and the whole effort integrated by the full time teacher of neurology.

During the fourth year, each student spends 6 clinic sessions (a total of 18 hours) in the neurological outpatient department. The clinic is staffed by

8 neurologists, 3 neurosurgeons, and 1 physician who is especially interested in diseases of muscles. The chief of service is "full time." The others are "part time," being engaged also in the teaching of neuropathology, electroencephalography, neurosurgery, and neuroanatomy. Undergraduate students are in attendance in the clinic in groups of 5 at a time for 2 weeks. There are, in addition, 4 or 5 graduate fellows who require instruction. Each student is given a patient and is assigned to a member of the clinic staff, his instructor. Unsupervised, he spends the first hour and a quarter with the patient in taking the history and making an examination. He then presents the formulation of his data to his instructor, who reviews the findings, diagnosis and recommendations for management. Finally, the student proceeds with the care of the patient under the auspices of the instructor. One instructor is responsible for one student and his new patient and in addition, for 3 revisit patients.

Throughout the academic year, from 4 to 5 o'clock, on Tuesdays and Thursdays, all of the clinic staff and the clinic clerks convene in conference to review the specially interesting problems of the day, including the results of surgical and other forms of treatment. A number of inpatients who were hospitalized after being examined in the outpatient clinic are then also reviewed and the results of intensive study appraised. From 5 to 8 patients are thus considered. The discussions in this conference stand at the apex of a carefully pyramided plan of instruction and give to the student a perspective of the fundamental nature of diseases of the nervous system and the relationships of neurology to other fields of medicine. This teaching exercise cuts across all departmental boundaries, involving in the interchange the preclinical disciplines as well as the medical, surgical, psychiatric, pediatric and obstetrical therapeutic technics. The resultant discussions are frank and critical, though constructive and sympathetic. An attempt is made to glean a lesson from each therapeutic success and failure. Each experiment of nature, including the doctor's therapeutic efforts, is exploited to further knowledge of the form and function of the nervous system and the natural history of its diseases. Fifty to eighty students and staff members and visitors attend these conferences.

2. TEACHING OF THE HOSPITAL HOUSE STAFF:

General Plan.—The resident staff of the department of medicine of the New York Hospital consists of 13 interns, 17 assistant residents and 1 resident. The neurological pavilion of 29 beds is staffed by one assistant resident and 2 interns, who serve for a period of 2 months each. Thus, each house officer during his 4 or 5 years of internship and assistant residency has at least 1 two month period of service on the neurological pavilion. In addition, there is an assistant resident who gives his entire time to neurology and who, under supervision, is responsible for about 150 consultations a year, requested from all other services.

The attending neurologist holds "rounds" on the pavilion from 10 to 11:30 o'clock each weekday morning. He examines patients admitted to it after the staff have completed their own examinations and special studies and the results

of any indicated laboratory tests are known. He discusses the formulation presented by the staff and offers criticism of diagnosis and makes suggestions as to the management and disposition of the patient.

A weekly conference with the entire medical house staff is held on the neurological pavilion on Fridays from 1:30 to 2:30 o'clock throughout the year. At these meetings the diagnostic and management problems on the pavilion are reviewed and criticized by those members of the staff not in residence on the neurological service. It becomes possible to ascertain at such meetings whether the members of the medical house staff have sound views on neurological problems. At the weekly medical "Grand Rounds" patients with diseases of the nervous system of teaching significance are frequently presented, thus continually bringing before the entire staff the issues raised by diseases of the nervous system. Also, in discussion of patients with other types of disorders, the function of the nervous system is introduced whenever pertinent.

Among the various departments of a large hospital, the unexpected occurrence of structural disease of the nervous system is a constant problem requiring prompt consideration and judicious solution. Requests for neurological consultations are received by the assistant resident in medicine assigned to neurology, who makes an examination and recommendations. If, in his judgment, the case requires more experienced attention, this service is provided by a neurologist who is available at any time of the day or night. This consultation service, which takes the resident into every department of the hospital, provides him with highly diversified neurological material for detailed supervised study and he thus exerts his influence as a teacher among many of the members of the various departments.

ADDITIONAL TEACHING EXERCISES

A. Neuropathology.—During a representative year there are 42 weekly clinical pathological conferences at the New York Hospital. These are attended by third and fourth year students, house physicians and staff. About one-third of these conferences are concerned with problems involving the central nervous system and in about one-third of the latter the entire session is given over to the presentation of case demonstrations of pathological involvement of the nervous system exclusively. The pathological data are discussed in detail by the neuropathologist aided by the projection of kodachrome photographs of the gross lesion and microscopic sections. The relation between the clinical picture and the location of the neurological defect is demonstrated.

Once a week at the New York Hospital, during 11 months of the year, there is held a seminar at which the neuropathologist examines brains (usually 5) and other nervous tissue accumulated from recent autopsy material. Each case history and autopsy protocol is reviewed preceding the examination of the brain. Similar seminars are conducted at Bellevue Hospital throughout 11 months of the year. During the year these seminars afford opportunity for examining and reviewing between 400 and 500 brains and protocols. Also, at the biweekly clinical neurological conferences at the New York Hospital, recent autopsy material of unusual interest is presented for consideration.

B. Clinical Neuroanatomy.—The aims of the course are twofold: (1) to enable fourth year undergraduates, house staff, and other graduate students, to visualize the nervous system in three dimensions and thus actually to see the significant relation of one part to another; (2) to enable the students to apply this information clinically. To accomplish these aims each student builds a plasticine model of the brain and upper two cervical segments.

This model is built according to the plan of development provided by study of the evolution and embryology of the nervous system. It follows the same pattern one would use in building a house; the older structures which form the segmental system or the foundation are built first, then the various superstructures are added floor by floor, or layer by layer. With each addition, the need it serves is considered. The model is four times the natural size. A color scheme is used to emphasize the connections and functions of the various parts. Those parts which work together and have a similar function are represented by one color. For example, the afferent cerebellar systems are in yellow, the efferent in brown.

The course requires attendance during a period of two and one half months. There are two one hour lectures each week, followed by a laboratory period. Students are provided at each session with a set of typewritten laboratory instructions and accurate drawings of the sections to be built. By means of these drawings the student cuts out the clay accurately and builds section upon section. Furthermore, wood cutouts of the cerebellum and forebrain are provided. Each part is labeled. The students are permitted to build the model in their leisure time. Such a model can be built in about 60 to 70 hours.

3. TRAINING FOR THE CAREER OF TEACHER AND INVESTIGATOR:

The training of teachers and investigators is oriented about bedside teaching experience and active participation in research. Didactic work is minimal. The men selected have been firmly grounded in general medicine and maintain constant contact with bedside problems of general medicine and neurology, for without this contact investigation ceases to be focused upon pertinent clinical phenomena. It is, therefore, implied that the students in this category will have unusual energy, curiosity and dedication. As a consequence of these requirements they are of necessity few in number. There is considerable flexibility in the training program, with opportunity for widespread contacts and work arrangements in other institutions. Arbitrarily defined training programs for such persons are dangerous. Hence encouragement is given to individual preferences and interests. Minimal requirements designed for this particular type of graduate training in neurology are summarized as follows. At the completion of a one year medical internship the candidate spends two years as assistant resident in medicine at the New York Hospital. During the first of these two years he rotates on the medical, pulmonary, communicable diseases and neurological pavilions, with part time for research. During the second year he serves as assistant resident on the neurological pavilion and in the neurological outpatient clinic, and pursues his research. During this year, opportunity is given for work

in neuroanatomy, two half days a week for 2 months; and for 3 to 4 hours a week of lectures in neurophysiology for 2 months. In the fourth year the trainee serves as resident on the neurological service at Bellevue Hospital; during the fifth year, as assistant resident at Payne Whitney Psychiatric Clinic and during the sixth year as Junior Consultant in clinical neurology for all the services of the hospital with the major portion of his time devoted to investigation.

Such trainees learn the use of special electrical apparatus and technics, including the cathode ray oscillograph and radiometric devices. Throughout their training, opportunities for research are afforded and completion of such investigations is given high value. Each trainee presents his work at appropriate times to the Cornell Medical Research Society, and to national societies. It is recommended in most instances that the trainee, before beginning his teaching career spend at least one more year at another institution with a distinguished investigator pursuing allied or relevant research.

The preparation by the trainee of reports and manuscripts associated with the description of investigations imposes a comprehensive and critical review of the relevant literature. Critical appraisal of the literature is also accomplished through formal presentations of patients at conferences. An extensive file of reprints and journal clippings on topics relevant to function and diseases of the nervous system is available for reference to students and house staff.

4. GRADUATE TRAINING FOR SPECIALISTS IN CLINICAL NEUROLOGY:

A. Veterans' Administration Hospital.—Through the "deans' committee" in collaboration with the Veterans Administration, it has been possible to extend the opportunities for graduate teaching of clinical neurology at the Kingsbridge Veterans Hospital, the Bronx, New York City. The service consists of 160 beds for patients with acute and chronic neurological diseases. There are also approximately 100 neurosurgical and 130 neuropsychiatric beds available for teaching. About from 400 to 500 patients with diseases of the nervous system are admitted per year. Provision is made for 5 residents training in neurology, and for 15 in psychiatry.

There are two groups of residents in this teaching program. Those in the first group have their prime interest in neurology, the second group in psychiatry, though most propose to practice both. The program is based on a three year training period. Appointments are renewed at the end of each year, renewal depending upon the adequacy of the candidate. All residents have had at least one year of medical internship.

Those in training specifically to be clinical neurologists are prepared as follows. During the first year the resident spends his entire time on the neurological service, with the exception of 2 months during which he is assigned to the neurosurgical service. In his second year and third year, each resident spends 7 months a year on the neurological service, 2 months a year on the neurosurgical, and 3 months on the neuropsychiatric services.

Those in training specifically for the practice of psychiatry, and those preparing for careers in neurosurgery also have, through exchange arrangements,

2 months a year of training in clinical neurology. This program has been accepted by the Board of Certification in Neurology as suitable for training and it is assumed that residents will apply for examination by the board at the end of their three year period of preparation. The residents are tutored by the consultant and attending staff in the technics of history taking, physical examination, management and disposition of each patient admitted to the service. They are also trained in the special clinical and laboratory technics involved in the diagnosis and treatment of neurosyphilis, in electroencephalography, and in the more routine procedures, as well as those psychiatric and psychological technics necessary to neurological formulation. All residents are expected to attend the weekly formal teaching conferences of the medical department throughout their training. Neuropathological demonstrations are held weekly.

The trainees are responsible for the care of and presentation of patients at the daily ward rounds made by the five attending neurologists who are members of the staff of the Cornell University Medical College. At the regular weekly clinical conference conducted by the Chief of Staff the most important problems are reviewed before the combined resident groups. Although pedagogic emphasis is placed upon intensive bedside training, opportunity is given for didactic and laboratory instruction in the anatomy, physiology and pathology of the nervous system at the Cornell University Medical College. A suitable time for such instruction is determined for each resident. Those interested in pursuing investigation of bedside problems in neurology are given an opportunity to do so.

B. Bellevue Hospital Neurological Service.—The service consists of two wards, one for males and one for females, with a total capacity of 50 beds. Approximately 400 new patients are admitted to the service per year. In the outpatient clinic during a representative year about 3,700 patients are examined by neurologists. Of these, about 450 patients are new admissions to the clinic. There are about 900 requests for neurological consultation per year from other inpatient services.

The inpatient wards are staffed by a senior resident (duration of service one year), two assistant residents (duration of service one year) and two junior interns (duration of service 4 months). The latter are interns in training in medicine but who are having part of their experience on the neurological wards. The resident is usually selected from the assistant resident staff, each of the latter having had at least one year of medical internship. The resident may retain the post for two years if his performance is excellent. The senior resident, in addition to conducting his service and preparing cases for presentation to the attending staff, is responsible for the expression of specialized opinion when consultation is requested by other hospital services. Each assistant resident is directly responsible for about 20 patients which he shares with a junior intern.

Recently through a grant from the Kellogg Fund, it has been possible to have a full time teacher of clinical neurology at Bellevue Hospital for the purpose of giving short, intensive courses in clinical neurology to veterans preparing for the practice of internal medicine.

APPRAISAL:

After 15 years of the operation of this enterprise the following appraisal of its results is offered: A survey of the performance of undergraduates and interns during their clerkships and medical intern years at the New York Hospital and elsewhere indicates that men so trained approach patients suffering from diseases of the nervous system with a degree of assurance and interest which is similar to that which they exhibit when they appraise a patient with disorders of the chest or abdomen. The average student is able to collect the evidence of dysfunction by observation of general behavior and attitudes, and by examination of mentation, sensory and motility functions. Furthermore, students so trained are able to arrange evidence so as to proceed intelligently with the necessary diagnostic and therapeutic steps. In short, they do not exhibit the frightened ignorance so common in those who lack experience with diseases of the nervous system.

The neurological service at Bellevue Hospital has trained many specialists and continues to supply candidates for certification in neurology. The Veterans Hospital program of preparation should begin to bear fruit in about three years.

A few well trained teachers and clinical investigators who have contributed appreciably to the advancement of learning in the subject matter of the nervous system and a number of well-trained internists and a few teachers of internal medicine have been developed.

Trainees and staff during this 15 year period have published five monographs or volumes and approximately 350 shorter communications as a result of the investigations conducted. Approximately one-half of these contributions have been written in collaboration with persons in other medical college departments.

An incidental, though no less important, achievement of the program has been the effect upon the teachers themselves. Through continuous and intimate contact with other members of the Department of Medicine in teaching and service activities, by the frequent criticism and support through medical and neurological conferences, and by the maintenance of high standards of clinical procedure, the teachers participating in this program have not only kept their interests and basic orientation broad, but have sharpened their special skill.

Clinical Exercises in Pharmacology*

HAROLD C. HODGE
Professor of Pharmacology and Toxicology
and
JOHN B. FIELD
Instructor of Pharmacology and Toxicology
School of Medicine and Dentistry, University of Rochester
Rochester, New York

Presentation of a wealth of uncoordinated facts and an inevitable stress on the mnemonic factor characterize our contemporary courses in pharmacology. This situation provokes unconventional and ingenious methods to make the material digestible for the average student. Thus, there are many variations in the pattern of presentation in different medical schools. Typical of the increasing utilization of mechanical teaching aids are cinematographic techniques and the application of these have recently been evaluated by Walton.[1]

Too frequently the goal of the preclinical teaching is obscured by professional preoccupation. In an article entitled "What Medical Students Think About the Medical School"[2] appeared the following statement in the student's own words: "In some medical schools there is much despair on the part of the student when he leaves the so-called preclinical studies to enter upon the clinical work. He finds that many things that were taught in the first two years were evidently of little importance since the men in the clinical years know so little of these things." In this report we will discuss a division of our teaching program in which we have tried to develop a "bridge" between academic indoctrination and clinical reality. The clinical "bedside" exercises, now an integral part of our teaching program, were initiated only a few years ago and have grown rapidly in student popularity and in instructional value.

Lest the inference be gained from this presentation that our pharmacology course is too clinical, a statement of the philosophy of our course organization is submitted. Pharmacology as an introduction to the physiological effects of the important drugs is centered around drugs; therapeutics, as application of drugs and other agencies in the treatment of disease, is centered around symptoms and patients. As a graduate field of scientific work, the laboratory and the clinic are coordinating sites of activity; for the second year student of medicine, pharmacology is one of the spans between physiological principles and clinical applications. The clinical exercise takes little more time than some of our laboratory experiments.

The availability of abundant clinical material on the adjacent floors of the Strong Memorial and Rochester Municipal Hospitals has made it possible to provide examples of the actions of important drugs under test. Although most

* From the Division of Pharmacology and Toxicology, Department of Radiology.

of the demonstration material is obtained from the wards of the Department of Medicine with whose cooperation the program has been undertaken, our material is given variety by the occasional study of patients on pediatric or surgical floors.

In brief, our procedure is as follows: The students are divided into groups of four and the groups are scheduled in succession. The students are asked to state any preferences for special types of cases but unless there is an admission of a case for which a preference has been registered, the groups are called in order. Two groups of students are maintained on call over week ends or evenings until 10:00 p. m. The majority of the patients have been presented during week days and school hours and without interfering with the routine of other classes.

The instructor makes the rounds of the medical floors twice each day to examine records of newly admitted patients and to select the demonstration cases. Notice of emergency cases suitable for presentation is usually telephoned to our office by the cooperating assistant resident physician in charge of the hospital floor. In any event, the final choice of patient is made after consultation and with the approval of the assistant resident physician. In order to clear interesting cases under the care of a private physician, permission is obtained. Unless the welfare of the patient is affected, the administration of therapy may be withheld until the patient can be presented to the group of students. Usually, however, the recommended therapy may be initiated without producing much alteration in the physical signs which would be of demonstration value to the students. It has been possible on the average to have the group see the patient within 5 to 10 hours after admission.

At the bedside, the assistant resident physician briefly presents the known pertinent history of the case and summarizes the pertinent physical findings (10 to 15 minutes). The students are then shown those physical signs which characterize the condition; edema of the legs, back and eyes, luetic lesions, skin pigmentation, enlarged thyroid, exophthalmos, dyspnea, cyanosis, etc., and are provided with stethoscopes to hear râles in the lungs, arrhythmias, etc.; electrocardiograms and available x-rays are also demonstrated. Questions of the students in regard to history and physical examination are answered at the bedside and then the group retires to hear the assistant resident and instructor discuss the therapy which is or will be instituted. Here the students are briefed in the reading of the hospital charts and any questions in regard to the material presented are answered. Unless there is a dramatic change in the condition of the patient from which, in demonstration, the students would benefit, they do not view the patient again until time of discharge. During the course of the patient's hospital stay, the students are urged to consult his chart daily and encouraged to make suggestions for employing therapy or request pertinent laboratory procedures which had not been considered by the house staff.

Daily records of temperature, drug dosage, urine output, body weight, or other data are abstracted by the students as they desire; graphs prepared help to visualize the therapeutic or other changes. While the patient is in the hos-

pital, each student is expected to find in the texts and current literature, articles bearing on the drug problem involved.

At time of discharge, the patient is again presented to the students by the assistant resident physician with a brief resumé of his hospital course, and the physical status is again demonstrated. Thus, the persistence or cure of such findings as edema, râles, arrhythmias, skin lesions, etc., is shown. Finally, the students are encouraged to ask questions of the house staff and patient. If the patient expires during the hospital stay, the students are called to be present at the autopsy.

Within 10 days of discharge, the students are required to submit a one page summary of the case history and a one or two page summary of their outside reading on one or any of the drugs which have been used on their patient. Usually, the students will include a minimum of 4 recent original articles dealing with the selected drug. At a mutually convenient time, the instructor and group gather for an informal discussion of the case and the therapeutics applied. Unrestricted student enthusiasm would prolong these sessions sometimes beyond two hours but the important matters can be discussed in about 45 minutes with some degree of mutual satisfaction.

Devoting about 6 weeks to the clinical demonstrations and exercising discrimination in the choice of demonstration material it has been possible to present 2 patients to each of 16 groups of students at a rate of approximately 6 cases a week.

Several illustrative case reports follow:

B. P., 88 years old, male, admitted the evening of 10/24/46 appearing acutely ill and in marked respiratory distress. Student group called and patient presented at 1 p. m. 10/25/46. Noteworthy were dyspnea, cyanosis, enlarged AP diameter of chest, fluid and rales in the chest, auricular fibrillation with pulse deficit, edema of eyes, sacrum and legs. Therapy included an oxygen tent, digitoxin, mercuhydrin, low salt diet. At discharge presentation on 11/10, dyspnea, cyanosis, pulmonary congestion and edema had cleared, the heart rate was normal without pulse deficit, body weight had been reduced 9 kg. and the patient was to be discharged on a digitalization regime. At conference on 11/12 the value of oxygen in cardiac failure was particularly discussed and the role of digitalis and the mercurials reviewed.

A. C., 70 years old, male, admitted 9 a. m. 10/23/46 appearing pale, icteric and chronically ill. Presented to student group at 2 p. m. that day. History of poor appetite, reduced stamina, weight loss of 30 lbs. in year. Remarkable in examination was smooth tongue, absence of ankle and knee jerks, and vibratory sense in legs. Blood picture characteristic of pernicious anemia. Therapy of folic acid gave marked clinical and hematological improvement. Conference held 11/17 discussing particularly therapy of anemias and various effects of folic acid.

K. L. C., 20 year old male, admitted 10/30/46 with a "sore" on the lip. Presented to student group on 11/1. History of luetic contact given. Examination revealed primary chancre on lip with positive dark-field examination and regional and generalized lymphadenopathy. Penicillin therapy begun the day of admission with generalized Herxheimer reaction noted at presentation of patient. Conference on 11/14 dealt with treatment of syphilis and the cautions and contraindications to be observed.

E. L., 60 year old female, admitted 10/16/46 with prolonged history of intractable debilitating asthma. Emphysema and asthma demonstrated to students at presentation on 10/19. Aminophylline, epinephrine, atropine, helium and oxygen had been given without relief and on the day of demonstration benadryl therapy was initiated. On 10/20 students called in to witness remarkable subjective improvement, normal respiration and cleared pulmonary signs. At conference on 11/18 the newer anti-histaminics were discussed.

Other cases presented in 1946 to student groups have included one of acute and chronic alcoholism with Korsakoff's syndrome, petit mal epilepsy under

treatment with tridione and dilantin, hyperthyroidism under presurgical treatment with iodine and thiouracil, rheumatoid arthritis treated with gold and salicylates, Sydenham's chorea treated with nirvanol, poliomyelitis treated symptomatically with prostigmine, lymphatic leukemia treated with urethane, several cases of penicillin therapy in pneumonias, septicemias, etc., and many cases given digitalis and mercurials. A highly intelligent young man who entered for implantation of pellets of desoxycorticosterone had been a known Addisonian for 3 years. He was thoroughly informed about the meaning of his symptoms and the details of his disorder and the informal bedside presentation was a most valuable experience for the students.

Throughout the duration of these exercises, the students have been encouraged to discuss the general therapeusis in assigned individual cases with the staff. When alternate drugs have suggested themselves to students, members of the resident staff were obliged to defend their choice. As instructional as dramatic recoveries have been the usual ratio of therapeutic failures. Since most students are not impressed with the textbook data of drug efficiency, their experience with clinical failure provides an awakening to a more wholesome respect for critical evaluation of therapeusis, as well as some appreciation of the psychological factors involved.

In addition to the more detailed exercises, we have illustrated general lecture topics occasionally by properly selected case presentations to the class as a whole. Over a 10 to 15 minute period of time, the assistant resident physician gives a brief history and reviews the pertinent physical findings demonstrating them on the patient where possible. The effects of therapy, expected or obtained, are discussed with particular reference to the selected patient.

Another action-demonstration is utilized in the weeks following the lecture on anesthesia. In groups of 4, the students spend a morning in the operating rooms receiving instruction from the hospital anesthetists, who demonstrate the routine procedures for induction and maintenance of anesthesia with the agents regularly employed. No report of their observations is required.

1. Walton, R. P.: Moving Pictures as Aid in Pharmacology Teaching, *J. A. A. M. Colls.*, 20: 251-259, 1945.

2. What Medical Students Think About the Medical School, *J. A. A. M. Colls.*, 20: 296-303, 1945.

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Application of Army Methods to Civilian Medical Courses

JOHN G. SINCLAIR
Chairman, Committee on Services and Development
University of Texas Medical Branch
Galveston, Texas

The faculty of the University of Texas Medical Branch, at the last regular meeting, assigned to the Committee on Services and Development a study of the plan devised by two Army Medical Officers.[1] What we report is not the study of educational techniques, but the study of the plan of organization suggested in this paper.

There has been tremendous fanfare concerning the methods used by the U. S. Army during the recent war in training its personnel in the arts of war. The implication, and often the outright claim of a number of educational experts, is that American education can profit immensely by taking over those techniques which were so highly successful in winning a war and apply them with a high degree of efficiency to civilian education in peacetime.

Clarification of these claims is necessary if we are to make any use of them. There is much confusion over the objectives of the Army as compared to the objectives of civilian schools. The Army is only interested in training. It has a deep antagonism for individualism in either thought or action. Even within the field of training, the military mind wants good soldiers who learn a limited skill well and who are not much concerned with the other fellow's job. Self expression is the last thing desired in an army. Read J. Frank Dobie's article on the Military Mind in a recent issue of Harper's.

The high pressured acceleration methods of the Army accomplished their limited objectives successfully but it is a long cry from that accomplishment to the training of educated citizens and leaders or of investigators and inventors. The arts reach the point of obliteration in military thinking.

Thomas E. Rardin and Norbert B. Reicher, major and colonel, respectively, in the Medical Service Training Program, print a completely detailed administrative set-up carrying over the Army ideal into the medical school. It visualizes a very elaborate personnel to provide all types of teaching aids under the supervision of a Director of Training responsible only to the Dean. It is, of course, planned to have liaison with the Department of Education of the University and much cooperation from everybody. Anyone viewing the services which this individual would control in the medical school will be aware of the tremendous power of coercion that would exist in his hands.

The Army plan mentioned assumes that the professional educator knows what are the best methods in any course in the school. According to the plan, he would be a medical man. His salary range would require that he be a part

1. RARDIN, THOMAS E., and REICHER, NORBERT B.: *J. A. A. M. Colls.*, 21: pp. 328-339 (Nov.), 1946.

time man. The Dean, by this arrangement, would become the budgetary officer of the school and that is about all. Few schools in this country could afford the staff pictured even if it were desirable.

It is our experience over many years that good teaching does not lean heavily on gadgetry but does depend on two essentials: the teacher must know what he is talking about, preferably at first hand; and in order to interest students, he must think it is important. Different teachers use widely different methods to attain their ends. Some are dramatic or emotional, others tell jokes to illustrate. Some write everything on the board to keep the pace slow enough for students, or draw elaborate pictures, formulas, or diagrams. Some like lantern slides, kodachromes or movies, while others prefer well drawn charts. Still others depend on showing the originals in slides, gross specimens, patients, or experiments. All of these gadgets are useful in the proper hands and at the proper time; when they are not used to cover up poor preparation or lack of coherent understanding of the subject.

It is our present feeling that we can secure the benefits of the plan outlined without risking the dangers inherent in it. We freely admit that much teaching in all schools is at a relatively low level of effectiveness. This may be due to what the authors term failure of teaching consciousness. This may also be due to factors outside the control of any one instructor: Poor schedule as to time of day, sequence, or total hours; undue pressure by contiguous courses on students at other hours; administrative sacrifice of unity of plan to diversity of teachers; failure of the clinical teachers to utilize what students learn, thereby setting up a traditional block.

We would recommend that the medical school maintain a permanent committee with a considerable overlap of terms to utilize experience. This committee should continually study objectives and the various techniques available to present them effectively. This committee should not be given any prerogative to enter into a critical study of any course without the express request of the teachers in that course, but they should be available at all times to aid those teachers who feel that they can profit by the advice and services of a committee.

Preclinical Education in China

H. C. CHANG
Director of Hsiang-Ya Medical College
Changsha, Hunan, China

Scientific medicine was introduced into China by medical missionaries. When Peter Parker, the first regularly appointed medical missionary to China, arrived in 1834, he immediately saw the importance of medical education, and three years later several young Chinese students were admitted to his hospital in Canton for study. However, the regular medical school which he planned in connection with the Canton Hospital did not open until 1866. It is said that Dr. Sun Yat-sen, founder of the Chinese Republic, first took up his medical studies in this school, which is now a part of the Canton Christian University and named in memory of him. Before the 1911 revolution, not more than half a dozen medical schools existed in China, practically all operated by Christian missionaries, one of which was the Peking Union Medical College, subsequently taken over by the Rockefeller Foundation.

After the early twenties, the Chinese Government, in undertaking educational reforms, took an active interest in medical education and began to incorporate schools of medicine in some of the newly organized universities. By the time the Sino-Japanese war broke out, China had more than 30 medical schools of various kinds. The expansion was, perhaps, a bit too fast, especially since China's education in basic sciences was still far behind time. The war ravaged practically all these schools, although the majority managed to keep going under the most unfavorable circumstances.

At present, the country has 28 medical schools with a total enrollment of about 6,000 students, about one quarter of the total number of medical students in the United States. About 700 students are graduated annually.

The quality of the schools varies greatly. While a few still require for admission a premedical education of two or three years of college work, most of them have shifted to the government curriculum of six years, with the first year devoted to premedical studies. This curtailment of premedical requirement is based on the argument that China is in a hurry to train her urgently needed physicians in as short a period of time and as economically as possible, and that a longer course would tend to discourage prospective medical students. In a way, this argument is valid. But under such a system the students, no matter how carefully chosen, are far from adequately prepared for medical education. One year of premedical training conducted by the medical schools, instead of at least two years by the science departments of the universities, can never hope to give the students the requisite foundation in biology, chemistry and physics. Moreover, owing to the flimsy background in language and social sciences, these students are deprived of the desired liberal education so important in their future dealings with patients. The defect of this system is almost immediately reflected when the students begin their preclinical work. At the time of graduation, they are also altogether too immature, their age averaging 24 years.

Of late, a compromise has been suggested. While retaining the present one year premedical curriculum as a minimum requirement for the average run of students who are intended for practicing physicians, a few picked ones might be offered a longer course of two or three years, so that they may eventually prepare for a career of professor or research worker, especially in preclinical fields. At the end of the medical course a dual degree of B.A. and M.B. (China's equivalent of M.D.) might be conferred as an added incentive for the longer time spent.

The preclinical curriculum, consisting of two years, is more or less after the American pattern, both in the organization of the courses and in the number of teaching hours (Table 1). However, as foreign language and organic chemistry are crowded into the second year, and as many schools find it necessary to borrow a part of the preclinical time to finish some of the premedical subjects, in practice not quite two years are available for preclinical teaching. Consequently, the students are overrushed. They have very little time to do collateral reading or participate in research.

The method of teaching varies with the quality of the school and the facilities in its possession. While a few schools strive to devote at least two thirds of the teaching hours to laboratory exercises, more have to be content with chiefly lectures, charts, models and, at best, some demonstrations. Take anatomy for example: not more than one-half of the schools are in a position to give a reasonably adequate course in human dissection, and almost none in any way comparable to what is offered in the American schools. This unsatisfactory state is caused by many factors, not the least of which is the shortage of equipment and specimens. Although there are no organized antivivisectionists in China, animals for experimentation are not easy to procure. The Chinese people have a superstitious veneration for the dead body, and this custom has greatly hampered the study of anatomy and pathology.

Deficient as the facilities are, still greater difficulties are met with in connection with the quality of students. They are not only inadequately prepared in basic sciences, as already mentioned, but they also have serious handicaps in language. For lack of suitable textbooks and of a standard Chinese terminology, most schools, with the exception of a few with French or German background, use English as the medium of instruction, at least in part. This proves an added burden to the students. Because their ability to read and write in a foreign language is limited, great difficulty is experienced in comprehending what is taught. A good deal of initiative is killed by the effort and time spent on consulting dictionaries. For this reason, all but the most brilliant pupils find difficulty in assimilating more than from 60 to 70 per cent of the subject matter. Practically none have time to read reference books. In the case of dissection and other laboratory work, progress is necessarily slow, because much effort is wasted on following the instructions.

There is a loud cry for teaching in Chinese, but until the scientific terms are more uniformly coined in the native language, and until more standard textbooks are written or translated, the shift from English to Chinese will not

seem advantageous or practicable. So far the schools using English are turning out better graduates. One of the advantages these students enjoy is that in the future they will have access to the vast volume of scientific periodicals written in English.

Perhaps the most serious aspect of China's preclinical education has to do with the extreme shortage of teaching personnel. Medical schools the world over are confronted with a lack of teachers of the preclinical sciences, and this lack is much greater in China than elsewhere. The situation is specially bad with regard to anatomy, physiology, pharmacology and biochemistry (Table 2). As a result, very few schools have well staffed preclinical departments, and in some ill qualified persons are appointed to these chairs. The reasons for this scarcity are many, the most important being China's relative backwardness in pure science. Pure science holds little attraction for the Chinese students, far less than applied sciences, such as agriculture and engineering. For the same reason, medical students do not view preclinical careers with favor. Perhaps, also because of lack of able leadership they are not inspired to take up these subjects. In any case, not only are qualified professors at a premium, but assistants and junior workers are also hard to recruit, thus foreboding a still more serious problem for the future. Unless speedily rectified, this situation will spell disaster for China's medical education in general.

To remedy the situation, a number of measures have been considered. To awaken the Chinese students and educators to the immense importance of pure science will necessitate a nation wide effort. This is the foremost step. The preclinical departments of medical schools must be better equipped than they have been, so that trained scientists may be attracted to these departments, and teaching and research may be done properly. The heads and professors of these departments must be sufficiently qualified and be able to fulfill the expectation of inspiring and training younger men for the respective field. Unfortunately, they are rather exceptional in China. In the next ten or fifteen years, the only feasible solution to this problem will be a dual program of inviting visiting professors from abroad and sending promising young scientists overseas for intensive preparation. In this regard, China definitely looks to the United States for help and guidance. It is already suggested that in the future despatch of medical personnel to America for study, workers for the basic need of preclinical education be given priority over all others.

For the present, the few able professors that are available in China are spread too thin in different schools, some geographically located near one another. There seems to be much reduplication and uneconomical use of the meager supply of teachers and facilities. Perhaps, they could be pooled to advantage. Perhaps, each school could concentrate on one or two departments which might be used both for research and graduate teaching. Rotating professorships might be created, especially for visiting scientists from abroad. Lastly, resort might be had to the employment of visual or auditory methods in teaching. Some of these steps will have to be taken in the intervening years between the present and some future day when China's source of preclinical teachers

will have attained a reasonable degree of self-sufficiency.

So much for the dark side. If one looks at the credit side of the ledger, one finds that preclinical sciences in China have made some strides, considering their humble start only fifteen or twenty years ago. A few schools have made a special effort to nurture and develop these basic departments with scientists of distinction working therein. The Peiping Union Medical College is an outstanding example. This school, in particular, has exerted a profound influence on the training and development of some of the medical education leaders China has today. Besides the medical schools, there are also several research institutes in China that are engaged in biological sciences, such as the Academia Sinica, particularly its Institutes of Biology and Psychology, the Central Health Institute, the Epidemic Prevention Bureau, and the Lester Institute for Medical Research. From these schools and institutes, a sizable volume of original work has come out. Although a good part of it is data collecting, some seems to have fundamental importance. The studies on Chinese diet, nutrition and calcium metabolism, on rickettsia, leishmania, and schistosoma, on vitamins, and on pharmacologic action of some of the Chinese drugs may be cited as examples. Unfortunately, the war destruction put a halt to some of the work that was in progress and made it difficult, if not impossible to continue even after the war. However, a nucleus group of scientific workers, in the face of a subminimal existence, spiritually as well as materially, are still holding fast to their cause. It is in them and the institutions they represent that the future of China's medical education really lies.

TABLE 1.—PRECLINICAL CURRICULUM IN CHINESE MEDICAL SCHOOLS.
(In effect in Hsiang-Ya Medical College.)

Course	Second Year Hours	Third Year Hours
English	72	.....
German	72	.....
Organic Chemistry	144	.....
Biochemistry	216	.....
Gross Anatomy	360	.....
Histology	144	.....
Embryology	72	.....
Neuro-anatomy	90	.....
Parasitology	108	.....
First Aid	18	.....
Physiology	.....	288
Pharmacology	.....	180
Bacteriology	.....	216
Pathology	.....	360
Physical Diagnosis	.....	108
Laboratory Diagnosis	.....	108
Psychology	.....	36

TABLE 2.—PRECLINICAL TEACHERS IN CHINESE MEDICAL SCHOOLS.
(Data compiled from seventeen schools by the Commission on Medical Education—1944)

Department	Having Two or More				Having One Only				Having Not One			
	Prof.	Asst. Prof.	Instr.	Asst.	Prof.	Asst. Prof.	Instr.	Asst.	Prof.	Asst. Prof.	Instr.	Asst.
Anatomy	4	1	0	2	8	5	4	7	5	11	13	8
Physiology	1	0	1	1	8	6	3	7	8	11	13	9
Biochemistry	0	0	0	3	7	2	3	1	10	15	14	13
Bacteriology	2	0	0	5	8	2	1	4	7	15	16	8
Parasitology	0	0	0	3	6	5	1	1	11	12	16	13
Pathology	3	0	0	3	8	3	2	7	6	14	15	7
Pharmacology	3	0	2	6	7	3	3	4	7	14	12	7

Figures denote the number of schools.

Introductory Lecture in Medical Literature Given at the Bowman Gray School of Medicine of Wake Forest College, Winston-Salem, N. C.

FREDERICK R. TAYLOR, B.S., M.D., F.A.C.P.
Professor of Medical Literature in the Bowman Gray School of Medicine
of Wake Forest College
High Point, North Carolina

So far as I know, this is a unique course in the curriculum of any medical school. The nearest approach to it I know of is in the extracurricular medical societies (not fraternities) among the undergraduates of certain schools. For example, in my undergraduate days at the University of Pennsylvania there were a lot of such societies, named in honor of their first patrons, living or dead. If dead, the successor in his chair usually became the patron. So, we had the George A. Piersol Anatomical Society, the William Pepper Medical Society, the D. Hayes Agnew and the John B. Deaver Surgical Societies, the Charles K. Mills Neurological Society, the Barton Cooke Hirst Obstetrical Society and many others. The names "Anatomical," "Medical," "Obstetrical," etc., had no special significance beyond the fact that their respective patrons were anatomists, internists, obstetricians, etc., for all the societies were general in nature, modeled on the organization of typical county medical societies. All were component units of the Undergraduate Medical Association or "U.M.A." Individual societies were usually small enough so that everyone could present a paper once a year, though, as I recall it, one society was considerably larger than any of the others. They usually met monthly, sometimes with, sometimes without their patrons. A patron would usually entertain his society annually at his home, at a club, at a hotel, or at a farm if he had one, with a dinner. Dr. Alfred Stengel used to entertain the William Pepper Medical Society at his farm with an afternoon baseball game followed by a dinner.

Once a year, a full day's holiday was declared for the Medical School in honor of "U.M.A. Day," when the annual meeting of the Undergraduate Medical Association was held at the school. This was run like a meeting of the American Medical Association, and was attended by undergraduates, faculty and guests. Everyone was asked to register. There were exhibits of scientific work and also of medical books, instruments, supplies and drugs. It was an all-day affair. The morning program was presented by undergraduates who had done extracurricular research during the year. Notable among these presentations was that of my childhood friend and later classmate at Pennsylvania, Cecil K. Drinker, and his wife, then an undergraduate student at the Woman's Medical College in Philadelphia. A few weeks after this, Dr. Edward Martin, John Rhea Barton Professor of Surgery, remarked in a lecture, "As to the pathological physiology of the thyroid, I can honestly do no better than to refer you to the brilliant work

of your classmate, Mr. Cecil K. Drinker, and his wife, who, so far as I know, have carried their researches in this field farther than anyone else to date." This was before Kendall discovered thyroxin. Some of you may know that Dr. Drinker, as the distinguished Professor of Physiology in the Harvard School of Public Health, gave the Natalie Gray Bernard Lectures here at Bowman Gray in 1944.

In the early afternoon the exhibits were inspected. This was followed by a scientific address by a very distinguished guest speaker. In my four undergraduate years these speakers were Dr. John B. Murphy, the famous Chicago surgeon; Dr. George W. Crile, whose name is familiar to you all; Dr. Alexis Carrell of the Rockefeller Institute and Dr. Walter B. Cannon of Harvard.

In the evening we had a banquet at which there was a little horseplay such as a mock clinic or quiz mimicking the eccentricities of faculty members, and the distinguished guest spoke on some phase of the broader aspects of medicine.

U.M.A. Day was unique. The unit societies were fine, but gave insufficient opportunity to really train students to prepare and deliver medical papers. No student had to join one, so some may have stayed out, though I do not recall such a case. It is of passing interest to me that the first medical paper I ever prepared and presented in my life was on pellagra before the Barton Cooke Hirst Obstetrical Society, and the first contribution I was asked to make to the *Oxford Medicine* was my first revision of the chapter on that subject by my friend Dr. Edward Jenner Wood of Wilmington, N. C., who had died. In June, 1946, Dr. Cayer and I completed the third revision of that chapter.

The earliest student undergraduate medical society was the Boylston Medical Society of Harvard.

The object of the present course is four-fold. I am giving its objectives in *ascending* order of importance. *First,* and of *least* importance, are the additional facts you will learn. You might get them quite as well, or better, by yourselves or in some other class. The acquisition of *method* and the *ability to get facts when you need them* is far more important than cramming yourselves with data you will forget soon, anyway. However, you cannot study any broad subject without learning some facts of permanent value.

Second, and of *great* importance, is *acquiring the ability to read critically.* Criticism is *not* flattery, and it is *not* mudslinging—it is estimating values as accurately as you can. "Of the making of books there is no end," says the Preacher in Ecclesiastes XII: 12, and, we might add, "of journal articles." A critical ability to distinguish the good from the bad, to know what is worth prolonged study and what belongs in the waste-basket, will save you much time and money, even though no one is infallible, and most of us have fallen for works by celebrities, only to be disillusioned. Incidentally, don't let the greatness of a name overawe you and warp your critical judgment. One of the greatest of all Professors of English Literature, the late Dr. Francis B. Gummere of Haverford College, in his introductory lecture on Milton, warned us not to hold up our

hands in a pious attitude as if in a cathedral and say, "Hush! This is Milton!" or "This is Shakespeare! It is sacrosanct!" We must go to these great masters and find out for ourselves what they are worth to us, their weakness as well as their strength. Only then can we really understand and appreciate them. So in medicine, we must read even the greatest masters *critically*, i. e., *discerningly*. Failure to do this with Galen blocked medical progress for about 1,500 years! To have worth-while standards, we *must* be critical, first of our own work, and then of the work of others. Pasteur said, "Worship the spirit of criticism. If reduced to itself, it is not an awakener of ideas or a stimulant to great things, but without it, everything is fallible; it always has the last word. . . . .

"It is indeed a hard task, when you believe you have found an important scientific fact and are feverishly anxious to publish it, to constrain yourself for days, weeks, years sometimes, to fight with yourself, to try and ruin your own experiments and only to proclaim your discovery after having exhausted all contrary hypotheses.

"But when, after so many efforts, you have at last arrived at a certainty, your joy is one of the greatest which can be felt by a human soul, ..."

This spirit of criticism is just as important in evaluating library findings as laboratory findings. Another great teacher of mine, Dr. Lyman Beecher Hall, John Farnum Professor of Chemistry at Haverford, on getting a correct answer from a student, often would ask, "How do you know that is so?" Woe betide the hapless wight who replied, "Because the book says so." "Don't you know that books make mistakes?" the irate professor would reply. "Does your reason tell you it is so? Have you laboratory evidence to prove it?"

I once saw a preacher turn red in the face and heard him thump on the pulpit and bellow: "DON'T CRITICIZE THE PREACHER!" I could only think, "What do you want? An audience that is sound asleep, unconscious, dead, or hypocritical?" (Hypocritical is literally the opposite of "hypercritical" and in that sense means deficient in criticism.) I expect you to be critical of me and of one another, good or bad, as the case may be, but more often good *and* bad than good *or* bad. If you aren't, then we just don't make enough impression on one another to count.

One other rather obvious point before discussing our next objective, and that is that a private medical library, as well as an institutional one, is *not* primarily to impress the public, but to serve as a *workshop*. Don't be like a doctor I once knew who had more money than literary intelligence, who bought every book in his field that he could get his hands on, good, bad and indifferent, and displayed them in quantity in his reception room. They impressed the undiscerning, but those with critical insight could hardly fail to note the bright, new, *unused* appearance of his library!

Our *third objective* is also of *great* importance. That is, to learn to digest what you read and present it in a brief, clear, forceful, pleasing way to the group,

on your feet. This will help you to take an effective part in the scientific programs of your medical society meetings after you graduate, and also in a teaching career. You get out of a thing what you put into it. We shall have the freest possible criticism in this field, with no holds barred, except that personal animosity must play no part. We are here to *help* one another, not hurt. So don't feel hurt if I tell someone who is restless and ill at ease on his feet, that his footwork was so magnificent that it distracted my attention from what he said, or that he swayed from side to side like an elephant, or wriggled as if he were doing a hula dance. Also, remember this: *always look at your hearers as much as you can,* so that you make them feel "He means this for *us.*" If you read manuscript, you must learn the trick of reading ahead so that you can really look up at your audience for appreciable periods, not merely steal an occasional fleeting glance at it. The speaker who never takes his eyes off his manuscript has a powerful soporific effect. You may recall the old story of the uninspiring English teacher who found one of his students sound asleep in his class. He read a passage in a boring way, then woke up the student and asked him for his opinion of it. "Sir, I have already given my opinion," said the student. "Why, Sir, you were sound asleep," replied the teacher. "Sir, sleep *is* an opinion," returned the student! This is all too often true, though not always with members of a medical audience, for some of them may have been working all the previous night and be overcome by Mother Nature even when really interested. It is, however, necessary for you to remember that you have to try to create such interest that you hold the attention of even those needing sleep, unless the need is literally overwhelming. Also, as a medical audience contains many with the scientific spirit, it is bound to be a critical one, and this should keep you on your toes.

When you are speaking in the amphitheater or classroom, you are the halfback carrying the ball. If you walk leisurely, you will probably wake up thrown for a 15 yard loss. You must hit the line hard. Don't be like a teacher I know of in another medical school whom I have seen talking at Staff Rounds in an unintelligible mumble, walking meanwhile over to the window with his back literally turned on his entire audience! (Illustrate by mumbling and turning away from the boys while saying this.) Don't interlard every couple of words or so with an "ah" or an "er." If you can't think what to say, a brief pause is much better than a constantly repeated syllable indicating uncertainty or embarrassment. Of course, an insuperable physical handicap should be known and understood. I once criticized a student for indistinct enunciation, only to learn that his trouble dated from a bulbar type of poliomyelitis. I was chagrined and apologetic; he was gracious. Of course certain handicaps can be overcome at times to a remarkable degree with determined effort. Some thousands of years ago, a young man was afflicted with stammering, so the story goes. He wanted to become an effective speaker, so he went down on the beach where the roar of the surf would keep others from hearing him, filled his mouth with pebbles, and even with that additional handicap, learned to speak so well

that his name has come down to us as Demosthenes. While this is not primarily a course in elocution, those of you who have been tortured by attending some meeting at which the speaker made you feel that he ought to go back to the primary grades to learn the most elementary decencies of self-expression, will see the point.

Our *fourth objective* is of *supreme* importance. That is, *the acquisition of an incorrigible habit of reading, and of being acutely uncomfortable when you want a fact you do not have, but can get, until you get it.* This habit will enable you to utilize your time well. In my academic days at Haverford, I worked for two years for a prize based on systematic reading outside of my curricular work. I value the prize, $40 in books, still, but value even more the familiarity with my chosen subject that it gave me, and most of all, the *habit of reading* which it engendered, which has never left me.

Don't plead a busy practice as a bar to study. Osler was one of the busiest medical men of all time, yet a voracious and critical reader. We can't all have an undergraduate to read to us while we take our baths, as he had his nephew do when the latter was taking his medical course, but we can use snatches of time here and there for study that will assume impressive proportions in a lifetime. In some of my early years of practice I shared a reception room with Dr. D. A. Stanton. I had graduated in medicine in 1913, had my hospital training, and had served as a medical officer in our army in France in World War I. I was studying in our reception room. A rather pompous man entered and asked for Dr. Stanton, who was out for the moment. He sat down, sized me up, and remarked, "You are a medical student?" "Yes, Sir." "Reading medicine in Dr. Stanton's office?" "Yes, Sir." (It happened to be my office too, but what of it!) Then we drifted to other subjects. Presently another physician came in and called me in consultation. The pompous man exclaimed, "Are you a *doctor?*" "Yes, Sir." "I thought you said you were a medical student!" "I did, Sir, for I am, and I intend to remain one as long as I practice medicine." Dr. Alfred Stengel once said that the man who gets a splendid undergraduate medical training and then stops studying is like a business man who deposits a lot of money in the bank and then keeps drawing it out, without depositing any more. Some day he will find himself bankrupt. The doctor's education is his capital. If he amasses some knowledge and then keeps drawing on it without depositing more, some day he will be intellectually bankrupt. So, we are all medical students together.

In addition to our four major objectives, in the last part of our time together each week, I propose to discuss briefly with you various publications in what we may call the field of medical *belles lettres,* including the lives and work of some of our greatest medical scientists, broad presentations of the experiences of certain types of patients, "Festschrifts" or testimonial volumes, etc., as we have the opportunity. This should give us inspiration. I believe Edison defined

"genius" as "2% inspiration and 98% perspiration." Certainly those of us below the genius level need just as much perspiration, but we must have some inspiration, too.

Our technic in pursuing our major objectives is this: a few of you will be assigned each time to read something of your own choice in current medical literature, digest it, and present it to the group the next week on your feet, *with a period of 10 minutes per presentation.* Whether you talk spontaneously, from notes, or read prepared manuscript, is immaterial so long as you do it clearly, forcefully and pleasingly, and look at your hearers enough to show them that you are trying to get something across to *them.* After every presentation there will be a free-for-all discussion of the value of the subject-matter, the reasoning and style of the authors, and the quality of *your* presentation. In order not to overlap, you will "stake your claims." This has usually been done by keeping a notebook or sheet in the library in some place of your choice, known and accessible to all of you. When you find something you want to abstract, see if anyone else has already appropriated it. If so, you must select something else. If not, appropriate it yourself by putting it in the notebook or on the sheet, as you would write a reference in a bibliography, thus: SMITH, M. I.: Accidental ingestion of DDT, Jour. Am. Med. Assn., 1946, CXXXI, 519, and put your initials or name after it. This gives you the exclusive right to present that article before the class.

A Brief Study of Prediction of Success in the Medical School

ARCHER WILLIS HURD
Director of Educational Research, Medical College of Virginia
Richmond, Virginia

Universities and colleges all over the country have been using entrance tests for years in order to more carefully select students who will be likely to be successful in their college work. Research in the construction and use of such entrance tests has been particularly active since World War I. In the field of medicine, the medical aptitude test sponsored by the Association of American Medical Colleges has been popular. About a year ago, the Association appointed a new committee to work on new tests for guidance in medical education.

It has been demonstrated quite conclusively generally that no tests yet devised predict success in college work very reliably. There are, of course, many factors influencing such success, and it is, therefore, not surprising that more accurate prediction has not been achieved. But investigators in aptitude testing have not given up the fight.

It is becoming more clear that one reason for lack of success in prediction is due to invalid and unreliable grades given by instructors. We cannot hope for valid and reliable prediction when the thing we are predicting itself is unreliable and invalid. Until we can have reliable and valid measures of achievement, therefore, we cannot have reliable and valid prediction. The Bureau of Educational Research and Service in our own college has reported one prediction coefficient in the School of Nursing which shows how this last mentioned concept work out.[1] When a comprehensive achievement test was used after instruction to measure success, a coefficient of correlation with the average of all entrance tests was $.90 \pm .02$. This is the highest predictive coefficient which I have seen reported in educational literature. It indicates that with better achievement measures of an objective nature, we may hope for better prediction. Probably most of the unreliability in prediction reported in so many studies is due to poor measures of achievement.

This is a report of four correlation coefficients computed for one of our classes in medicine. The coefficient between average grades in three years of the medical school, and percentiles in the medical aptitude test for 67 students was found to be $.14 \pm .08$ (Otis Chart). This means that there was no reliable prediction from the aptitude test, if we use the average grades given by instructors as measures of success.

The computed coefficient between average grades and a local test in reading exercises in medical literature—comprehension—was $.04 \pm .09$. This shows no value in using this reading test as a predictive measure of average grades as given.

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1. HURD, ARCHER WILLIS: "The Problem of the Prediction of College Success." *J. Educational Research*, 38: 217-19 (Nov.), 1944.

A third predictive coefficient between average grades received by these students in (a) high school and in (b) the medical school was .28 ± .08. This coefficient is somewhat higher, but not significant as it is less than four times the probable error. A probable explanation for the higher figure (.28) in this case is that personal judgment of quality of performance in both high school and college is likely to be affected by certain personality factors determining judgments of instructors in both schools. It is acknowledged that pleasing personalities affect judgment of personal worth although in school and college achievement of an objective nature, only real performance ability should rightly be the criterion of judgment. The "apple-polishing" student still reaps some rewards for these activities, in subjective grades given.

A fourth correlation coefficient—between the medical aptitude test and the reading test was .47 ± .08, a much higher coefficient than the others obtained. There is apparently, more relationship between the medical aptitude test and measured reading ability than between any of the tests used and instructors' average judgments of achievement.

It is apparent that better objective measures of achievement must be had before we can expect better prediction of student success. And better measures of achievement can only be secured by making sure that we have clear aims and objectives in instruction, with all courses planned to accomplish efficiently these objectives in student performance. When objective, valid and reliable measures of accomplishment have been prepared and used, and entrance tests planned definitely to predict such achievement, we may hope for more exact prediction. So, rightly, valid prediction rests on a much better planned curriculum designed to accomplish the clearly conceived objectives set up. So far, our objectives have been too vague and indefinite. Often they are not even given statement, and then, too often, expressed for effect in inducing students to attend the particular institution. What we must have for better curriculums are more carefully thought through, and honest objectives set up as real foundation stones on which to build the curriculum,—the superstructure which the architects have designed. Only, then, shall we have purposeful planning, purposeful construction and purposeful prediction.

Teaching Psychiatry to Medical Students

LESLIE A. OSBORN
Acting Head, Department of Psychiatry
University of Buffalo School of Medicine
Buffalo, New York

Macbeth: How does your patient, doctor?

Doctor: Not so sick, my lord,
As she is troubled with thick-coming fancies
That keep her from her rest.

Macbeth: Cure her of that:
Canst thou not minister to a mind diseased,
Pluck from the memory a rooted sorrow,
Raze out the written troubles of the brain,
And with some sweet oblivious antidote
Cleanse the stuffed bosom of that perilous stuff
Which weighs upon the heart?

Doctor: Therein the patient
Must minister to himself.

Macbeth: Throw physic to the dogs; I'll none of it.

In present day medical practice it is through the skill of his physician that the patient ministers to himself and maintains or regains health. Shakespeare recognized long before Freud the part a "rooted sorrow" can play in the production of disease and the role of "thick-coming fancies" in disturbing relaxation and sleep. Such problems were then and still are brought to the doctor; patients and relatives still expect him to be effective in these as in their other ills; and disappointment and helplessness if he fails them still lead to resentment and rejection of all medicine such as Lady Macbeth's physician heard—"Throw physic to the dogs; I'll none of it."

If the need has always been there, the realization of its pressing importance and mobilization of the medical profession to meet it has been very recent. Dramatization of the size and difficulty of the problem has come through the experiences of two world wars. We are now aware that practical and comprehensive planning will be needed, and that it is a problem of the entire medical profession rather than that of a relatively small number of specialists. A very encouraging indication that medicine is girding to tackle and conquer this foe as it has done to others is the recognition of the place of psychiatric teaching in the curriculum of medical schools and the expansion of psychiatric departments to give students a sound foundation in human relations, mental hygiene, psychiatry, child development and guidance and psychotherapy. As the University of Buffalo School of Medicine has an active program of psychiatric teaching blended into the curriculum in a way that appears to us to have its merits, this report is offered as a contribution to the growing discussion of the manner in which medical schools can best meet students' needs for preparation in psychiatry.

There is much of an intangible nature in psychiatry, and there is often a strong preconception present which excludes psychiatry from general medical thinking and identifies it with alienism. Further, there is no general acceptance of any scientifically established theory of psychiatry, and theoretical controversy is as easy to start as it is about politics and religion. For these reasons, the freshmen students are taken to the Edward J. Meyer Memorial Hospital in the first term and shown patients. Selection of the cases shown is made carefully to stimulate interest and to invoke the desire inherent in the students to help people in trouble. Patients are selected from the medical and surgical as well as the psychiatric observation wards. Students are free to interrogate patients and sometimes they voluntarily visit them on the wards later. They are given such background as they ask for in class discussion after the patient leaves, and then are free to discuss the case, ask questions and debate what might be done. Every effort is made to include patients whose problems can be used as illustrations in the courses to follow. Arrangements are made to have the freshmen conducted through the hospital in small groups. As a term assignment, the class is told at the first session that they may select any one of the cases seen during the term and write a discussion of the problem or problems that interest them in it. The marking of such papers is a large undertaking with big classes, but it gives an insight into the students and their individual reactions to the patients and the teaching methods used.

During the second term, a course in healthy human relations is given. Intrapersonal factors are discussed first: heredity,—what it does and does not mean, intelligence, affective development and ultimate integration of personality with maturity. Then interpersonal relationships which permit and foster development are reviewed. Home and family life with particular emphasis upon the early years are stressed as very significant in shaping the course of later life. Then less proximate influences which early influence the child through the parents, later more directly, are discussed. The physician's role in explaining the pattern of child development and recognizing individual variations; in helping with marital and parental problems; and in using his privileged position and prestige in community life, is indicated. These are presented with practical illustrations drawn from actual general medical practice, and reference is made to the cases seen in first term.

In the third term of first year, we take up the main schools of thought in psychiatry, historical and contemporary. From ideas of witchcraft, demon possession and influence of stars, through Mesmer's work, the attempts of man to understand the origins of his own behavior are depicted as still progressing, with psychoanalysis and psychobiology dealt with in considerable detail as broadening and deepening the scope of his quest. This first year program takes a weekly one hour class, except in first term when hospital sessions take one and one-half hours.

The second year course consists of a weekly class of one and one-half hours. Usually patients are shown to illustrate topics under consideration, and through-

out mimeographed notes are distributed to simplify and systematize presentations. In the first term, clinical psychiatry is introduced with the presentation of the various types of reaction. Cases are chosen to present contrasts; one week major disturbance is shown with gross psychosis, next week psychoneurosis gives the students an idea of differences of degree and also of kind of disturbance. A patient whose difficulties are in some proportion to his present reaction will offset the one whose immediate situation shows little to account for the severity of his personality disturbance. Organic contrasts with psychogenic, with the apparent contrast much less than appeared at first when psychosomatic interrelationships are brought out. Reactions to frustration taking different forms are presented with the very useful teaching diagram from Karl Menninger's "The Human Mind,"—broken personalities and broken situations,—reminding the student that the psychopathic and criminal are socially sick as the psychoneurotic and the psychotic are sick in terms of inner disorganization. Along with this demonstration of various types of reaction, the need for clinical methods of study is stressed and students are taught to observe and record carefully the data requisite for later interpretation. At this stage nothing is done to systematize the students' methods of interpretation, but in class discussion, free rein is given the students to make what correlations they can. Mental status techniques are checked by interviewing a patient in the presence of the class and then having each student write up his observations for his term grade.

During the second term, attention is directed to psychiatric hospitals and laws. The function of various hospitals is reviewed and methods by which legal aspects of hospital admission are carried out are outlined. At this time, small groups,—usually one-fourth of the class at a time,—are taken through the Buffalo State Hospital to observe its equipment and operation.

The third term centers attention on correlation of data to reach a sound understanding on which an estimate of prognosis and a program of treatment can be based. Before commencing his attempt to correlate his evidence, the student must be sure he has all the evidence available. This is grouped into evidence obtained from the patient, namely mental status and history, physical and laboratory findings, psychological tests and observation of progress while in hospital; and evidence obtained from others, namely informant history (which students are taught to take) and reports and records from previous hospitalization, courts, physicians, agencies and the like. The use of psychological tests has been presented gradually with the clinical cases and then discussed with the students by the psychologist. They are familiar with intelligence, aptitude and interest tests, deterioration tests and projection methods such as thematic apperception and the Rorschach Test as diagnostic procedures. A mimeographed outline (appended) of questions to guide the student in case interpretation is used.

With this background, the student is prepared for clinical work in psychiatry during his third year. We divide the junior class into two sections, one-

half taking clinical work at the Buffalo General Hospital and the other half working at the Meyer Memorial. There are differences in the practical assignment of the two sections because the predominance of patients for student work is in the psychiatric observation ward of the Meyer Memorial. As such differences are of local significance only, they will not be discussed here. We try to present psychiatry as an aspect of medical practice that permeates through it and only in a limited sense and a relatively few cases can it effectively be separated from medicine as a whole. Therefore the psychiatric faculty in both teaching hospitals are cooperating with other departments and it is only one phase of the student's clinical training that specially forcusses attention on the psychiatric problems of patients.

The junior student is assigned to clinical psychiatry for four weeks. During that time he participates in ward rounds, and has assigned to him two patients weekly. He interviews informants as well as patients; completes his case study and then presents to a member of the faculty in an individual tutorial session the findings and his interpretations and plan of treatment. In addition, he has an opportunity to learn ward procedures. His work with patients and informants is supervised by a social worker, and we aim to have at least one home visit made by each student. Where possible, each student has at least one case with immediate therapeutic possibilities so that he can, under supervision, come to grips with problems of psychotherapy. Some students elect to follow up such cases in the outpatient department.

In the junior year, students are well enough into the subject to be benefited by a variety of instructors with varying viewpoints and experience. The junior clinical cases are heard, in the main, by psychiatrists in private or institutional practice. During the first two years more is gained by having one point of view consistently worked out, and this is the main responsibility of the head of the department.

In addition to ward work, students participate in twelve two-hour conferences with the psychiatric faculty, alternating between the Buffalo General and the Meyer Memorial Hospitals. We realize that we are not training specialists, but we are endeavoring to give students a sound foundation for the kind of work they will be called on to do as physicians. These conferences, therefore, take as their main problem cases in which treatment is of the type that a general practitioner should be able to give. Students become aware of the aspects of therapy that relate to their own maturity and understanding of life; they learn of means of access to the "written troubles of the brain," such as hypnosis and narcosynthesis, and learn of their value and limitations from physicians who used these methods in the service. The length of the conference permits full discussion. The number of theoretical lectures in the clinical years is small, but those we have deal with psychiatric treatment. Students in general medicine also take part in psychosomatic conferences.

The senior year does not have much of an organized psychiatric program.

Its chief emphasis is on psychosomatic medicine—through clinical conferences —and children. By this time the prevention of adult maladjustments of all forms by assurance of opportunity for children to develop in harmony with their "inner evolutionary destiny" and the family and social culture medium is envisioned as a mental hygiene objective of prime importance. In their work in pediatrics at the Children's Hospital they receive integrated instruction by a psychiatrist with combined pediatric training, not only in the problems of children as are seen in the outpatient clinic but in the personal and emotional aspects of the illness of each child in the hospital. The senior students attend weekly psychosomatic clinical conferences, those who took their junior year at the Buffalo General changing to the Meyer Memorial and vice-versa. In addition, on the wards and in the outpatient departments, they have opportunity to discuss individual cases with the psychiatric consultants.

During the entire medical course personal counselling is available to the students who seek it. During the freshman year each student has a "get acquainted" interview with the head of the department, and at any time a student may request an interview with a faculty member of his own choosing. In the past, we have had students prepare an autobiographical personality study during the junior year, but we have had to discontinue this temporarily for limitations of time and personnel. Another project with promise which has had to lapse for the time being is the choosing by each sophomore of some topic for special study, to be presented in the form of a paper later. Such topics as hypnotism, psychosomatic aspects of thyroid disease or hypertension, electroencephalography and community facilities for the care of children, if spread among the various members of a class, will enrich its discussions with student-"specialists," yet no one student is unduly burdened. Such topics offer an opportunity for discussion in the senior year.

OUTLINE FOR PSYCHIATRIC INTERPRETATION

Investigation

Evidence should be as complete and accurate as possible

From Patient:
- a. Mental Status and History
- b. Physical Findings, Lab. and X-ray, etc.
- c. Psychological testing.

From Others:
- d. Informant History
- e. Old Records; Reports, e. g., Agencies
- f. Hospital Progress—Doctors' and Nurses' Notes

If evidence is inadequate, what further study is needed?

Correlation

1. Is this patient incapacitated at all? If so:
   - (a) How long has disability existed i. to present degree?
     ii. to any degree?
   - (b) How severe is the disturbance? (Major, minor, marginal)
   - (c) In what way?
     - Is physical health involved?
     - Is capacity to adjust involved?
     - How are physical and adjustment factors related?
2. How did the patient get this way?
   - (a) Present situation—difficulties and proportion to reaction
   - (b) Previous factors—trace as far back as possible

Intrapersonal—innate make-up; constitution
—intelligence, type of personality
—personal organization and maturity

Interpersonal—parents, home life in childhood
—siblings, other relatives
—emotional life, mating, marriage
—children, friends, attachments

Social—cultural and economic factors

Symptoms—explanation of clinical findings
—mental mechanisms, conflicts, etc.

3. What type of reaction is indicated? (e. g., organic, affective, etc.)
   (a) Work out differential diagnosis as far as evidence permits
   (b) State working classification if possible

4. What in the patient and situation are: (a) Assets?
   (b) Liabilities?

5. What insight and desire to solve his problems does the patient show?

6. What is the prognosis? (a) Untreated
   (b) Treated—best theoretically possible?
   —best practically available?

Therapy

1. In proportion to size of problem, how comprehensive a plan is needed?

2. Where and how should treatment be undertaken?
   (a) Is hospitalization indicated? Why, where, for what period?
   (b) In the hospital, what program of therapy would be required?

3. What specific indications are there in treatment?
   (a) Psychotherapy—what might be accomplished directly with patient?
   (b) Organic and other indications; fever, shock therapy, etc.
   (c) Environmental—what can be done to help with situational problems?
   (d) Symptomatic—how can symptoms, e. g., excitement, insomnia be treated?
   (e) Adjuncts—what occupational, recreational therapies can help?

4. Social: What community problems are involved? How can social work help? What can be done to help relatives?

Anglicization of Latin Scientific Terms

BRADFORD N. CRAVER
Summit, New Jersey

The pronunciation of Latin anatomical, bacteriological and other scientific terms is in a state of confusion. This has many unfortunate effects: the student who is not qualified to recognize the correct pronunciation acquires the errors of his teachers, the student who knows the correct pronunciation is distracted by his instructor's linguistic ineptitude and has the uncomfortable feeling that his teacher's ignorance in one field may extend to others.

Several of my colleagues, also teachers in medical schools, have made the observation that they felt that this situation was regrettable but that they were unable to correct it because of a lack of knowledge of the pronuncial principles involved. The purpose of this paper is to present the relatively simple rules governing the anglicization of Latin terms. Were we Latin scholars, the Latin pronunciation should be retained but since we are not, and it is not worth the effort to become such, we can avoid exposing our ignorance by giving the terms an English pronunciation. This is not intended for the minority that has become indifferent to the niceties of language or for those who, in defense of their indifference, press the naïve postulate that a knowledge of their own field mystically provides them with a knowledge of the pronunciation of its technical language; the fallacy of that view has been well exposed before.[1] This paper is directed rather toward those that strive to provide the best possible teaching. Fortunately for the students, there are many in this group.

The accent of Latin scientific terms may be on one of two, and only two, syllables: (1) the penult, which is next to the last syllable; (2) the antepenult which is the syllable preceding the penult. The penult is accented if it be a long syllable, otherwise the antepenult. We may omit any discussion of secondary accents since they follow naturally if the primary accent be correct. The syllabication of Latin words is easy because of the three main principles that govern it: (1) a Latin word is comprised of as many syllables as it contains vowels or diphthongs; (2) a consonant between two vowels goes with the succeeding syllable; (3) two consonants are divided, one going with the preceding and one with the succeeding syllable. To the last principle there is an important exception that states technically that in the case of a mute before "l" or "r," both consonants go with the succeeding syllable. The mutes include: "b," "c," "ch," "d," "g," "p," "t," and "th." The list is formidable but can be conveniently remembered as those consonants that, in combination with "l" or "r," frequently occur at the beginning of English words (excepting "dl," "tl," and "thl"). The method of syllabication just outlined accords with the Roman but is at variance with some of the principles of the formalized English method. The former, however, is more logical and makes clearer the placing of the accent.

To make the foregoing and subsequent principles clear, examples marked

with Webster's diacritical marks will be given. This is open to the objection that many will not understand them but it should be obvious, since those markings are the shorthand key to orthoëpy, that anyone that does not take the trouble to learn them will never learn correct pronunciation. The time spent in learning them represents the tuition one must pay for knowledge. For the reader's convenience the following table has been included.

TABLE OF DIACRITICAL MARKS

(From Webster's New International Dictionary, 2nd Ed.)

Latin Vowel	Symbol	English Ex.	Latin Ex.	Diacritical Spelling
long "a"	ā	ale	ramus	rā′ mŭs
short "a"	ă	add	antrum	ăn′ trŭm
	ä	art	arteria	är-tē′ rĭ-ȧ
	ȧ	sofa	antra	ăn′ trȧ
			Taenia saginata	tē′ nĭ-ȧ să-jĭ-nā′ tȧ
long "e"	ē	see	venae	vē′ nē
"ae" and "oe"	ē		Aedes aegypti	ā-ē′ dēz ē-jĭp′ tī[4]
short "e"	ĕ	bed	femoralis	fĕ-mô-rā′ lĭs
medium "e"[2]	ê	event	depressor	dê-prĕs′ sôr[4]
long "i," "ei"	ī	ice	rami	rā′ mī
short "i"	ĭ	bit	inferior	ĭn-fē′ rĭ-ôr[4]
			Plasmodium vivax	plăz-mō′ dĭ-ŭm vī′ văks
long "o"	ō	boat	homo sapiens	hō′ mô să′ pĭ-ĕnz[4]
short "o"	ŏ	odd	os	ŏs
medium "o"	ô	obey	sternocleidomastoideus	stûr-nô-klī-dô-măs-toi′dê-ŭs
"au"	ô	orb	auricularis	ô-rĭ-kû-lā′ rĭs
			Ancylostoma duodenale	ăn-sĭ-lŏs′ tô-mȧ dû-ô-dĕ-nā′ lê
long "u"	ū	use	bubo	bū′ bô[4]
			Culex quinquefasciatus	kū′ lĕks kwĭn-kwĕ-fă-shĭ-ā′ tŭs
short "u"	ŭ	bud	abduktor	ăb-dŭk′ tôr
medium "u"[3]	û	unite	articularis	är-tĭ-kû-lā′ rĭs
"e" in syllable ending in "r"[2]	û	urn	cervicalis	sûr-vĭ-kā′ lĭs
"oi"	oi	coin	mylohyoideus	mī-lô-hī-oi′ dê-ŭs
	ng	sing	longus	lŏng′ gŭs

The following words illustrate the principles already discussed:

symphysis pubis	sĭm′ fĭ-sĭs pū′ bĭs	Double consonants divided; single consonant with succeeding syllable; penult ending in short vowel is not accented.
bacillus butyricus	bă-sĭl′ lŭs bû-tĭ′ rĭ-cŭs	
colli	kŏl′ lī	Of two consonants between vowels one goes with preceding and one with succeeding syllable; final "i" is always long.
cocci	kŏk′ sĭ	

coli	kō′ lī	A vowel ending an accented syllable is long.
bacterium	băk-tē′ rĭ-ŭm	
sacrum	sā′ krŭm	Both of two consonants, of which the second is "r" or "l" and the first a mute, go with following syllable.
vibrio cholerae	vĭ′ brĭ-ō kŏ′ lĕ-rē	

The penult is always accented if the syllable be long, otherwise the antepenult, as we have stated above. The penult is long under the following circumstances: (1) if it contain a long vowel or diphthong, since a diphthong is the equivalent of a long vowel: dorsalis—dôr-sā′ lĭs; Necator americanus—nē-kā′ tûr ă-mĕ-rĭ-kā′ nŭs; (2) if it contain a short vowel in a syllable closed by a consonant: extensor—ĕks-tĕn′ sôr, Shigella dysenteriae—shĭ-jĕl′ lă dĭ-sĕn-tē′ rĭ-ē; (3) if it contain a vowel followed by "x" or "z" since they have the sounds respectively of "ks" and "dz" and so are considered "double consonants": coxae—kŏk′ sē; adnexa—ăd-nĕk′ să. The Romans distinguished long and short syllables by the time it took to pronounce them. A syllable ending in a consonant, or one containing a long vowel, takes longer to pronounce than one that ends in a short vowel. Thus the rationale (răsh-ŭn-ā′ lē) of Latin accent becomes clear. A vowel ending an accented syllable always has the long sound: foci—fō′ sī. This work illustrates the principle that a final "i" is always long.

In anglicization, certain peculiar vowel and consonantal sounds appear as exceptions to the simplicity of the original Latin, which was essentially a phonetic language. These represent a compromise between Latin simplicity and English complexity. A few notes regarding these exceptions will permit us to recognize them readily.

The principal vowel sounds encountered in anglicization but not in the original Latin are as follows: (1) a final "a" in an unaccented syllable is pronounced as the final "a" in sofa: vena—vē′ nȧ; (2) an "a" before a single "r" has the sound of "a" in art: arcus—är′ kŭs; (3) "e," "i," and "y" before an "r" followed by any other consonant save an "r" has the sound of the vowel in her: hirsuties—hûr-sū′ shĭ-ēz, nervus—nûr′ vŭs, but arrector pili—ăr-rĕk′-tôr-pī′ lī; (4) final "e" or "u" is pronounced as though long but somewhat more snappily; these are described as the "medium" sounds in the table and are represented respectively by the symbols: "ê" and "û": lacrimale—lă-krĭ-mā′ lê; genu—gē′ nû.[4]

The consonantal peculiarities worth noting are as follows: (1) "c" and "g" before "e," "i," and "y" and their diphthongal equivalents "ae" and "oe" are soft as in cinch and gypsy: turcica—tûr′ sĭ-kȧ; vagina—vă-jī′ nȧ;[4] (2) "c" after a vowel and followed by an "i" that is in turn followed by another vowel is equivalent to "sh": facies—fā′ shĭ-ēz;[4] (3) "si" and "ti" have the sound of "shi" as in ship, if they occur in the penult and are followed by another vowel: praeputium—prê-pū′ shĭ-ŭm and hirsuties—hûr-sū′ shĭ-ēz;[4] (4) a final "s" is pronounced as "z" after "ae," "au," "e," "b," "m," "n," and "r": fauces—

fô′ sêz; (5) "x" initially is equivalent to "z," otherwise "ks" except when an initial "ex" is followed by a vowel in an accented syllable when it has the sound of "gz": exemplum—ĕg-zĕm′ plŭm.

In conclusion, a few endings often abused may be noted with their correct pronunciation: -ae=ē; -alis=ā′ lĭs; -ales=ā′lēz; -aris=ā′ rĭs; -ares=ā′ rēz; -arum=ā′ rŭm; -oris=ō′ rĭs; -ores=ō′ rēz; -i=ī; -iva, -ivus or ivum=ī′ vă, ī′ vŭs or ī′ vŭm; -es=ēz. Ill-advised attempts to apply these principles often lead to such absurdities as prŏ′ sĕ-sēz, which is not a Latin plural, for the perfectly good English plural prŏ′ sĕs-sĕz.[4]

If the purpose of medical teaching be training alone, much as a plumber might train an apprentice, we can rightly view linguistic niceties as a dispensable frill, but if our purpose be education plus training, we must value a knowledge of and facility with our language. Something is lacking when we hear a thoughtful student remark, "I wish my teachers would agree on pronunciation."

The author thanks his many former colleagues in Rochester and present colleagues in Summit for their kindness in reading this manuscript and in making valuable suggestions.

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1. Technical Writing.—T. A. Rickard: Published by John Wiley & Sons, New York, 1923. "Medical Orthoepy," B. N. Craver, Science, 96:272, 1942. "How's Your Medical Orthoepy?" J. V. Cooke, Washington Univ. M. Alumni Quart., 88-97 (Jan.) 1943.
2. Webster uses the symbol ĕ to distinguish this sound in an unaccented syllable. Since the sounds in ordinary speech are so similar they are not distinguished in this paper.
3. These represent the long sounds of the vowels in unaccented syllables in which position they are pronounced more rapidly so the second component of the true long sound is dropped. There are, however, frequent exceptions.
4. Modified from Webster.

What Shall We Ask Them?

PAUL G. ROOFE
Professor of Anatomy
University of Kansas School of Medicine
Lawrence, Kansas

Professor L. L. Thurston[1] states, "So far we have not seen any characteristic profile for medical students. This probably means that the medical profession is so broad in scope that it has opportunity for wide range in types of talent." This statement is of great importance and is a challenge to all who serve on Admissions Committees. There is no question in the minds of those who have studied the problem that the medical profession is broad in scope. There have been diverse talents presented by entrants into the field who have remained with great success.

The problem faced by Admissions Committees in all medical schools is one of selecting the best student material for enrollment, in order to meet the demand for practice, research and teaching, the three interdependent divisions of the profession. The personal interview is a very important and necessary part of the selection process. Can we not develop more skill in interviewing?

We who serve on Admissions Committees feel that we must approach our problem equipped with as much scientific information as possible. Dr. Franklin D. Barker[2] says, "My personal conviction is that the real doctor is born and not made, and that he is truly called to his life work."

That statement describes what aptitude testing attempts to do, namely, find out if the individual is "born" to his selected profession. (The Admissions Committees do not select the applicant's grandparents.) Those who serve in such capacities must rely on available tests. From the first report of Dr. F. A. Moss[3] until his most recent report (there has been one almost every year), educators in American medical schools have realized the value of aptitude tests.

The experience of most schools where studies have been made relating to the correlation between aptitude tests and scholastic records[4] has shown that the

1. THURSTON, L. L.: Theories of Intelligence, *Scientific Monthly*, 12; pp. 101-112, 1946.

2. BARKER, FRANKLIN D.: Determining the Fitness of the Premedical Student, *Bull. A. A. M. Colls.*, 2; pp. 16-21 (Jan.), 1927.

3. MOSS, F. A.: Scholastic Aptitude Tests for Medical Students, *J. A. A. M. Colls*, 5; pp. 90-110 (Mar.), 1936.

4. RANDLES, F. S.: A Study of the Accomplishment of Students in High School, Colleges, and Medical School. *J. A. A. M. Colls.*, 9; pp. 257-266, 1934.

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MOURSUND, WALTER H.: Premedical qualifications in relation to achievement in medical school. *J. A. A. M. Colls.*, 7; pp. 149-157, 1932.

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VENABLE, JOHN: A Report of the Correlation of Medical Aptitude Test Values, Premedical Records and Freshman Medical Grades for the Class of 1938, at Emory University. *J. A. A. M. Colls.*, 11. pp. 337-349, 1936.

DOUGLAS, BEVERLY: A study of the predictive value of the medical aptitude test at Vanderbilt School of Medicine. *J. A. A. M. Colls.*, 13; pp. 380-390, 1938.

aptitude test is a useful and generally reliable tool. However, the faculty at the University of Tennessee[5] holds that the premedical scholastic record is the most important single factor in determining the qualifications of an applicant. Certainly, there is value in the aptitude test as pointed out by Alan M. Chesney,[6] chairman of a special committee reporting on the evaluation of this specific test.

We at the University of Kansas Medical School place the applicant's college record first and his aptitude test second. We consider the college record from the standpoint of the overall picture it presents, and also of the purely premedical requirements. This procedure enables us to arrive at a fair understanding of an applicant's inclinations. Since we are a state supported school we are obligated to give first consideration to citizens of Kansas. We have a definite scholastic minimum to which we adhere. As in other institutions we have a limited amount of physical space to accommodate students. It is therefore possible and necessary to make selections.

At the beginning of the personal interview with each member of the Admissions Committees, the applicant fills out a regular questionnaire which relates to his personal, social, and economic situation.

QUESTIONNAIRE

Applicant .....

1. Vocation of father.....Residence.....
2. Relatives (medical or allied professions).....
3. Reasons for entering medicine.....
4. Scholarship .....
5. Favorite science .....
6. Financial status .....
7. Self-support (with extent) .....
8. Extra-curricular activities and hobbies .....
9. Preference for specialties .....
10. Probable location after graduation .....
11. Family: Married?..... Number of children.....
    Is wife working? .....
12. Religious affiliations .....
13. Years of military service and rank at beginning and end.....

What information are we to learn from the young men and women in our short interviews? In addition to the above personal record, we have before us his scholastic record. We also have the results of his aptitude test. We look over these records hurriedly and have a fair estimate of his proven ability. Our method of approach at this point is very important. The applicant should be made to feel that we cordially welcome him. We should put him at ease mentally and emotionally, thus encouraging easy conversation. We should make him feel our sincere interest in his future as well as the future of the profession he desires to enter.

In our short interview, the questions should be phrased in such a manner that we learn whether or not the applicant has a natural bent as well as a deep

5. Hyman, O. W.: Further attempts to Improve Methods of Selecting Medical Students, *J. A. A. M. Colls.*, 15; pp. 186-188, 1940.
6. Chesney, Alan M.: Evaluation of the Medical Aptitude Test, *J. A. A. M. Colls.*, 11; pp. 15-32, 1936

desire to study medicine. It is impossible as well as impractical to standardize such questions. The two individuals conducting the interview (for undoubtedly the applicant has questions also) are human beings with the most complicated and diverse personalities. Each seeks to understand the other in terms of his individual experience.

Many applicants state, "I have always wanted to be a doctor; I have always wanted to study medicine; since early high school I have been thinking about finishing in medicine, etc." These statements may carry as much weight coming from certain individuals as the reply, "I want to be a doctor so that I can be of service to humanity." The combination of the two desires gives the most meaningful direction to student interest. It is my personal opinion that an enlightened self interest with competence coupled with the anticipated "inner warmth" that may come by doing good to humanity insures success in the medical profession while one desire alone may not be sufficient for a successful career. The motivation should be in part personal for a certain amount of self interest leads to a good performance record and a well trained competent doctor serves humanity. A burning desire to do good without ability and skill may be harmful. It would be futile to attempt to list questions which would convince a committee member that the neophyte has chosen his field properly. We are not personnel men nor are we trained in vocational guidance. We are officers and instructors who try desperately to determine who should enter the medical field. Chancellor Robert Maynard Hutchins maintains that professional training is learning the tricks of the trade. He may be right but our job, in fact the job, is to pick the person who is geared to do the tricks. We are somewhat in the position of the Selective Service Boards during the emergency whose duty demanded that they show impartiality as far as their humanity permitted.

The interview should end in a pleasant manner. A frank statement that the applicant's chances for admission is doubtful makes for a better relationship than false encouragement. Skillful procedure in interviewing is one phase of public relations which we should never neglect. The applicant should leave with the attitude that whether he is accepted or rejected the integrity and professionalism of medical education in the university is above reproach.

Having discussed the mechanics of the interview, a few remarks pertinent to a current situation may clarify our thinking as it relates to the veteran group seeking admissions. More than 70 per cent of the applicants have had military experience. We learn from the record (see above questionnaire) before us, his progress in military experience. If for example he has entered as Pfc. and leaves the service as a commissioned officer, he has shown ability. There are cases in which young men of promise get behind the 8 ball in military service, and are unable to advance, but it would be most unusual if a man with ability remained there long. The military record is one means by which we view an applicant's "behavior pattern." It may be also considered a performance test. (If the committee is fortunate enough to have a psychiatrist included in its membership, his estimate and opinion of the applicant's present "behavior pattern" is of inestimable value.)

The military service record may be of greater future importance if military training becomes a permanent part of our national life. Any undertaking, whether going to college, serving one's country as a soldier, or other duties, are means whereby committee members may discern an applicant's reactions or life pattern. Such available records however briefly presented are helpful.

We would be reluctant to leave the subject of interviewing without critical comment of portions of our questionnaire already referred to in this article. Granting that the form contains important items of social, economic and military history, we feel it worthwhile to discuss a few points in more detail. Social inheritance (questions 1 and 2) does affect one's attitude and future plans. Therefore, if the applicant has a long history of medical practitioners in his family he has a knowledge of the demands and rewards of the profession. He is probably normally endowed with the same attitudes and abilities. The cautious committee member will try to discover if because of the social inheritance, family pressure has been too great in helping the applicant choose his career.

The reasons for entering medicine, scholarship and favorite science (questions 4, 5 and 6) have been commented upon. The applicant's ability to finance himself (question 6) is of great importance. At present Public Law 246 is doing most of the financing. We consider a borderline case scholastically and one of low financial means to be a great risk. We all know the unfortunate results of outside employment for medical students. In many cases a heavy academic schedule does not permit time for such earning without physical harm.

We feel strongly that information regarding extracurricular activities and hobbies (question 8) indicates an applicant's natural interests and aptitudes. If a man or woman has a well classified and excellent collection of coleoptera, ants, or butterflies he has powers of observation and a definite scientific bent. He possesses those finer instincts which make a good scientist, namely, curiosity, acquisitiveness, good workmanship, etc. This field is most difficult to appraise. If one is interested in sports only, he may be so constructed psychosomatically speaking, that he would make a better salesman than a country doctor. One example of an applicant's reply to this question recently will illustrate this point.

A young man, 21 years of age, was a technical sergeant, stationed on Okinawa after hostilities had ceased. On being asked how he used his leisure time he replied that he played bridge and attended the movies. Further questions revealed that he had not interested himself in native customs, diseases of the population, burial tombs, or anything about the flora or fauna of the island. He had made no scientific observations. It is doubtful if a man so constituted would have enough curiosity to be a good observer of human disease and behavior to succeed as a doctor of medicine. Fortunately a set of questions which points to an individual's ability to make use of such opportunities are usually included in the aptitude test. That assures the committee that the applicant can make useful observations and draw conclusions.

Preferences for specialties (question 9) is not necessarily a significant question. There are individuals who have seen a certain phase of medicine which

appeals to them. The majority of our applicants are undecided as to specialties and also to probably location (question 10). This is often due to lack of contacts.

The marital status (question 11) is important in relation to the economic situation. An applicant's interest in his family is an indication of a stable, social individual.

Some members of Admissions Committees are interested in an applicant's religious affiliation (question 12). This in itself plays no significant part in the aptitude of a man contemplating the study of medicine. Character references are taken for granted. The applicant is assumed to be of good moral and ethical behavior or the application would not have been accepted.

We can state briefly that Admissions Committees are primarily concerned with information presented by means of the following: (1) Scholastic record; (2) Aptitude record; (3) Applicant's questionnaire; (4) Military record (if available); (5) Personal interview.

As a result each member of the Admissions Committees summarizes the above information for his own permanent use in the following Interviewer's Record.

INTERVIEWER'S RECORD*

Date.....

Name of Applicant.....Residence .....
Marks of Pre-Med. Av.....Med. Apt. Test.....
Total Av. .....Other Tests .....

Interviewer's Estimate (Circle one, or two, adjacent letter rating)

Health A B C D E
Personality A B C D E
Life Achievement to Date A B C D E
Probable Scholarship in Medical School A B C D E
Probable Achievement as a Physician A B C D E

Additional Notes
1.
2.
3.
4.
5.
6.

* Courtesy of Dr. W. F. Roth, University of Kansas Medical School.

TENTATIVE PROGRAM

FOR THE

FIFTY-EIGHTH ANNUAL MEETING

OF THE

ASSOCIATION *of* AMERICAN MEDICAL COLLEGES

TO BE HELD IN

SUN VALLEY, IDAHO

OCTOBER 27-29, 1947

(This is not the order in which these papers will be presented)

Address of President: The Association of American Medical Colleges

WILLIAM S. McELLROY, Dean, University of Pittsburgh School of Medicine

Aims and Objectives of Medical Education

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Revision of the Curriculum

Many persons and organizations are interested in bringing about a revision of the curriculum as to content, arrangement of subjects and even shortening the total time. Dr. Frank A. Weiser, editor of the *Detroit Medical News,* commented on these points (38:) July 14) 8, 1947). He feels that the study of medicine is not so profound and difficult that it cannot be mastered in a shorter period of time than is now required. That the premedical, medical and hospital teaching can be coordinated —which is not now being done. Residency training in general practice and in industrial medicine should be added to the curriculum. A step in this direction is the plan inaugurated by the Cook County Hospital of Chicago which will train interns for general practice in a two year term of service and have them go into practice in a small community where the need for a physician is great.

The hospital has become a very important part of the education of the physician, both as an undergraduate and a graduate student. Teaching programs have not been adjusted to meet this condition. A revision of the curriculum which will provide a course of study based on sound principles and which will meet the needs not only of today but of tomorrow is in urgent demand. Dr. Weiser would have the Association of American Medical Colleges become the guiding body in a critical review of the medical curriculum with the view of shortening the time for formal training. There is general agreement with this thought. The Association of American Medical Colleges has already appointed a committee to revise the curriculum. The Advisory Council on Medical Education has also become interested in the problem. And the projected survey of medical education in which the Council on Medical Education and Hospitals of the American Medical Association and the Association of American Medical Colleges will participate jointly will also concern itself with a revision of the curriculum. These two bodies have appointed three representatives each who will meet September 6 and 7 to discuss plans of procedure. These plans will be submitted to the Association of American Medical Colleges at its annual meeting in October for consideration and adoption with or without modification.

In order to lighten the load now imposed by the present curriculum, it may be considered to remove some subjects now taught in the junior and senior years—clinical subjects—from the curriculum and include them in a teaching program to be relegated to the hospital. Probably this would necessitate including the intern year in the whole educational program. That is a very desirable step to take. It would split off from the present curriculum for undergraduates what is really graduate study trending toward specialization. Many years ago the present writer suggested dividing clinical teaching into three departments—medicine, which would include general medicine and general surgery (that portion once designated as minor surgery), obstetrics and pediatrics. Surgery, as surgery, should be entirely a graduate subject since it calls for great skill and special training which cannot be imparted in the short time allotted to it in the present curriculum. Medicine would not include any work in special subjects such as dermatology, except in its basic aspects as applied to

general practice. Everything that the general practitioner should know can be taught in the hospital so far as the specialties are concerned. Furthermore, the importance of the specialties in education would be enhanced by such a program and the student would receive a much better education in the foundation subjects than he receives today. Perhaps, too, the pace would be more leisurely. We do not need more time. We do need a better educational program, one based on true pedagogic principles; not a program which is characterized by speed and mass production. Undoubtedly the result of such a program would be better trained physicians, general practitioners now needed so badly. Every one realizes this and steps are being taken to meet this need. The future of medical education and practice is bright with hope.

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Appointment of Interns

The arrangements for the appointment of interns agreed to by the Committee on Internships and Residencies of the Association of American Medical Colleges, the American Hospital Association, the Catholic Hospital Association and the Protestant Hospital Association are working out well. True, there is an occasional case where a hospital tries to "jump the gun" but, on the whole hospitals are abiding by the agreement. Doubtless the end of the chaotic condition besetting the appointment of interns, which prevailed for many years, is now at an end.

On several occasions, the Committee and the Executive Council of the Association of American Medical Colleges have refused to make exceptions to the rules adopted, especially in the case of appointment of interns by the U. S. Navy, which asked for more time, because one exception would justify more exceptions which would, inevitably upset the entire plan.

The Committee on Internships and Residencies is functioning well but its work can be facilitated a great deal if instead of eight regions, each presided over by a chairman, there were sixteen regions. The suggestion to change the makeup of the Committee accordingly has come from the chairman of the Committee, Dr. Jean A. Curran, and was concurred in by the Executive Council. Dr. Curran will present a new setup at the Sun Valley meeting for action by the Association. Each one of the sixteen regions will have its own chairman.

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The Sun Valley Program

The program of the fifty-eighth annual meeting is published elsewhere in this issue of the JOURNAL. In the main, three topics will be discussed by those participating in the program: (1) the selection of students; (2) required basic science teaching for residents; (3) pedagogy. The address of the president will be devoted to a presentation of the place of the Association of American Medical Colleges in medical education. And for the first time, the aims and objectives of medical education will be set forth by a man who is not only a physician but also president of a university, Dr. Tresidder of Stanford.

This program promises to be most interesting. It deals with subjects in which every one connected with the faculty of a medical school is interested. Of course, not every one will be highly or specially interested in every paper to be presented but every one will have his interest aroused by some paper on the program. Which is what a program should do—present a few items of general interest and other items of special interest to the few.

According to present indications, the attendance on this meeting promises to be large, comparable to the attendance at the 1946 meeting. Travel arrangements from Chicago to Sun Valley and return and Pullman reservations have been made for every one who has stated that he will attend the meeting, and hotel

reservations have also been made. So, there is nothing to worry about after you reach Chicago until you return to that city. The railroad will get in touch with you shortly, advising you of your train reservation and where and when transportation can be picked up.

See you in Sun Valley.

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Journal Mailing List

One of the most difficult tasks is keeping alive the mailing list of the JOURNAL. Every effort is made to remove names from the list of men who should not receive the JOURNAL any more and to add names of men who should receive. Revision of the list is a tremendous job and an expensive one and since it is necessary to conserve the finances of the Association as much as possible, a revision cannot be made too often. Colleges can help. If they will notify the office of the Association of names to be deleted and of names to be added, the task of keeping the mailing list up to date will not only be lightened, but the list will be a better list. It is useless to send a copy of the JOURNAL to a man who has departed this life, and it is important that every new man on the faculty who should receive the JOURNAL does get it.

A dean of one of the member colleges suggested that the JOURNAL should be self supporting. He is right. It should be self supporting. But what have the member colleges done to help to make it self supporting? The answer is *nothing*. Advertising helps to pay for the cost of publishing the JOURNAL. Because the Association is pinched for money, it is not possible to engage the services of an expert advertising solicitor. The JOURNAL has made a fine place for itself in medical literature—but it is an expensive proposition. Cost of publishing has increased at least 100 per cent. Advertisers are reducing their advertising. The JOURNAL has lost a considerable income from advertising this year—as has every other publication. The income of the Association has been otherwise curtailed. How, then, can the JOURNAL be made self supporting? Soliciting advertising from the office is not good. Personal interviews of prospective advertisers and advertising agencies is the only way to secure advertising. Every effort is being made to meet the contingency but without more funds and help from the members, to make the JOURNAL self supporting is only wishful thinking.

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Audiovisual Education

The Committee on Audiovisual Education of the Association of American Medical Colleges is doing a fine job and making good contacts. However, the program which must be effected if this important venture is to reach fruition, requires the active cooperation of every medical college—not merely acquiescence and approval of the program outlined. Plans for carrying on the work proposed by the committee and cooperating government agencies call for the expenditure of a considerable sum of money each year. Colleges can show their interest in the program if they will make a contribution. The proposition is made in their interest alone. It is not an outside proposal in which it is expected that medical schools may be interested. The plan is wholly in their interest. The principal outlay of funds will be met by the U. S. Government through its cooperating agencies—the Army, the Navy, the Veterans' Administration and the U. S. Public Health Service. All these agencies have agreed that the carrying out of the plan should be the responsibility of the Association of American Medical Colleges. The Association alone will be responsible for organization. True, it will also be expected to provide some funds but the bulk of the money needed to carry out the plan will be provided by the government agencies named above.

Medical school administrators are requested to give this problem serious thought and to cooperate in helping to bring the proposed Medical Film Institute into being.

By Air to Sun Valley

In making plans to attend the meetings of the Association of American Medical Colleges in Sun Valley, October 27-29, 1947, here are some air travel facts you may consider.

United Air Lines can serve you from almost any part of the country and cut travel time from days to hours. Delegates from the East and Pacific Northwest may fly directly to Gooding, Idaho, and thence by motor coach to Sun Valley. Examples of flying time and cost (less Federal tax) to Gooding are: From New York (15 hours, 40 minutes), $109.50; from Chicago (10 hours, 40 minutes), $73.35; from Seattle (4 hours, 35 minutes, $32.25.

San Francisco and Los Angeles delegates may avail themselves of United's new cut-off from Reno to Boise at considerable saving in time and fare. Motor bus service is available from Boise to Sun Valley. Flight time and cost to Boise are: From Los Angeles (7 hours, 6 minutes), $48.10; from San Francisco (4 hours, 36 minutes), $31.65.

Any local United ticket office or travel agent will work out an itinerary.

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Aptitude Test Examination

Under the agreement reached between the Association of American Medical Colleges through its Committee on Personnel Practices, of which Dr. Carlyle Jacobsen, of the State University of Iowa is chairman, and the Graduate Record Examination Office of the Carnegie Foundation, an examination will be held in selected colleges for students who contemplate entering medical school on October 25, 1947, and on February 2, 1948.

For further information communication should be made either with Dr. Jacobsen or with Dr. Kenneth W. Vaughn, director of the Graduate Record Examination Board, 437 West 59th Street, New York 19, N. Y. It is important to make the necessary arrangements for taking either one of these examinations as soon as possible.

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Report on Student Accomplishment

Those medical schools which have not yet sent to the office of the Association the reports on student accomplishment for the 1946-1947 session are urgently requested to do so as soon as possible. By so doing, it will help the office force to complete their part of the work.

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Application Cards

Colleges are urged not to forget to fill in the application cards and send them to the Association office as soon as possible. To file these cards, from which a great deal of worth while information is derived, is a big job. It entails months of work. So, please help by sending them as soon as you can.

College News

University of Texas
School of Medicine

Dr. C. M. Pomerat, professor of anatomy and director of the Tissue Culture Laboratory, has sailed for Europe as a representative of the Tissue Culture Committee of the National Research Council to attend the International Cytology Congress in Stockholm and the International Physiology Congress in Oxford. While in England, Doctor Pomerat will spend some time in research work at Strangeways Laboratory, Cambridge, with Doctor Honor B. Fell.

In honor of the late Dr. Albert Olin Singleton, professor of surgery, there has been created a special fund to be known as the Albert Olin Singleton Memorial Fund for support of the work of the department of surgery.

Dr. Louis Van den Berghe of the Institute of Tropical Medicine, Antwerp, Belgium, and a member of the staff of the Institute of Scientific Research in Central Africa, was a recent visitor for a conference on chemotherapy of tropical diseases. Dr. Van den Berghe reported on the use of Bayer 205 in certain filarial infections.

In recognition of the work of the staff of the John Sealy Hospital in connection with the Texas City disaster victims, the Monsanto Chemical Company of St. Louis has given a grant of $25,000 to assist in the development of a Rehabilitation Clinic at the University of Texas Medical Branch, Galveston. Other industrial concerns in the Texas City-Galveston area are also assisting in the development of the project. The clinic will be developed in accordance with the recommendations of the Baruch Committee for Physical Medicine, and will involve the services of orthopedic surgery, neurosurgery, plastic surgery, physical and occupational therapy, psychological guidance, social readjustment, and job placement.

The Sugar Research Foundation, Inc., of New York City has given a grant of $3,000 for the support of studies by Dr. W. A. Selle, professor of physiology, on protective factors in experimental cancer of the liver.

A special surgical unit for plastic and maxillofacial surgery and neurosurgery is being developed. This unit was planned by the late Dr. Albert O. Singleton and includes an operating suite, with x-ray, offices, and wards and private rooms. The new unit will be under the direction of Dr. T. G. Blocker, Jr., professor of plastic and maxillofacial surgery, and Dr. Samuel Snodgrass, associate professor of neurosurgery.

Dr. R. H. Rigdon, formerly professor of pathology at the University of Arkansas Medical School, has accepted appointment as professor of experimental pathology and director of the Laboratory of Experimental Pathology.

George A. Emerson, Ph.D., professor of pharmacology, gave a series of lectures in chemotherapy at the University of Louisville School of Medicine during July. While at Louisville, he engaged in special research studies in chemotherapy with Dr. Peter K. Knoefel, chairman of the department of pharmacology at the University of Louisville.

Recent Appointments: Dr. F. J. L. Blasingame of Wharton, lecturer in anatomy; Dr. C. R. Allen, associate professor in anesthesiology; Dr. A. A. Ormsby, associate professor of biological chemistry; Dr. J. W. Middleton, assistant professor of internal medicine and director of the Student Health Service; Dr. Gaynelle Robertson, lecturer in ophthalmology; Dr. C. C. Grulee, Jr., assistant professor of pediatrics and as resident director of the Stewart Home for Convalescent Children; Dr. C. A. Handley, lecturer in pharmacology and toxicology; Dr. Marshall Brucer, assistant professor of physiology; Dr. Howard G. Swann, associate professor of physiology; Dr. C. E. Dernehl, assistant pro-

fessor of industrial hygiene; Dr. Robert M. Moore, professor of surgery and chairman of the department of surgery; Dr. T. G. Blocker, Jr., professor of plastic and maxillofacial surgery; Dr. A. W. Harrison, assistant professor of thoracic surgery; Dr. Albert O. Singleton, Jr., assistant professor of surgery.

Dr. T. G. Blocker, Jr., has been named director of the Postgraduate Training Program.

The American Cancer Society has made a grant of $10,000 for the support of special research on the growth of cancer cells to the Tissue Culture Laboratory under the direction of Dr. Charles M. Pomerat.

Dr. E. L. Porter, professor of physiology, is spending several months with Dr. H. S. Liddell, professor of psychology at Cornell University, Ithaca, New York, and director of the Cornell Behavior Farm. Doctor Porter and Doctor Liddell will continue their joint studies on chronic experimental neuroses in animals.

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University of Utah
School of Medicine

Dr. Henry Plenk has been named assistant professor in the department of radiology. Dr. Plenk was formerly associated with the University of Chicago clinics.

Dr. George Sayers, assistant professor of pharmacology, was awarded the John J. Abel prize established to stimulate fundamental research in pharmacology for experimental therapeutics. The award, which gives a cash payment of $1,000 plus travel allowance and a special bronze medal, is administered by the American Society for Pharmacologists and Experimental Therapeutics, sponsored by Eli Lilly & Company.

New Appointments: Dr. Emil G. Holmstrom, formerly associate professor of obstetrics and gynecology, has been named professor and head of the department. He succeeds Dr. C. E. McLennan. Dr. Thomas Dougherty, formerly of Yale University, has been appointed professor of anatomy (histology). Dr. William Moretz, recently of Rochester University, has joined the staff as assistant professor of surgery, vice Dr. Randolph Shields. Dr. Hans Reich of the University of Basle will assist in a cancer research project now under way in the department of biochemistry, financed by grants from the Cancer Research Division of the Donner Foundation and the U. S. Public Health Service.

The Life Insurance Medical Research Fund has allocated $10,500 for research to be conducted by Drs. B. V. Jager, H. H. Hecht and J. P. Waldo of the department of medicine on the effects of streptococcus infections of the heart.

Dr. Irvine McQuarrie, head of the department of pediatrics, University of Minnesota, recently delivered two lectures sponsored by the Utah Medical Foundation. The first on "Recent Advances in the Method of Diagnosis and Treatment of Epilepsy and Related Disorders," and "The Clinical Significance of Hypopotassemic States."

A total of $25,805 has been allocated to the Medical School by the American Cancer Society in the form of three research grants and one fellowship. This includes $3,000 per annum to be given to Dr. Charles M. Huguley, Fellow in Medicine under the guidance of Dr. M. M. Wintrobe; $4,560 has been allotted to Dr. M. M. Wintrobe for the study of halogenated amines and related compounds and of irradiation in the management of leukemia, Hodgkins disease and lymph node diseases; $10,395 was granted to Dr. George Sayers for work on "Urinary Output and Adrenocorticotropin" and "Regulation of Pituitary Adrenocorticotropic Activity." The remainder consisted of a grant of $7,350 to support study being made by Dr. H. H. Lerner, professor and head of the department of radiology on the protective and therapeutic action of roentgen radiation and chemical agents in mice with experimental leukemia and lymphosarcoma.

Columbia University College of Physicians and Surgeons

A teaching affiliation has been made with St. Luke's Hospital which will include undergraduate students, hospital residents and graduate physicians. Twenty-four students will serve their clinical clerkships in St. Luke's under the instruction of members of the hospital staff directed by Dr. John H. Keating, president of the Medical Board of the hospital. Members of the hospital staff who are responsible for instruction will be appointed to academic positions in the university. A joint committee of the hospital board and the medical school will coordinate the cooperative educational program.

Arrangements have also been completed to provide training in rural medicine in the Mary Imogene Bassett Hospital in Cooperstown, New York. The aim is to train physicians for medical practice in small and rural communities and for better general distribution of physicians. Medical students will serve as clinical clerks in the hospital; staff doctors will be responsible for the teaching. A joint board representing the hospital and the medical school will coordinate the work.

Dr. Marion B. Sulzberger, assistant clinical professor of dermatology and syphilology, New York Postgraduate Medical School and Hospital at Columbia University, has been appointed professor of clinical dermatology and syphilology of the New York Postgraduate Medical School and director of the department of dermatology and syphilology of the New York Skin and Cancer Unit. He succeeds Dr. George M. MacKee, who is retiring and has been made professor emeritus of the medical school.

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University of Chicago Medical School

Dr. Arno B. Luckhardt, professor of physiology, has been designated distinguished service professor. Dr. Dallas B. Phemister, professor and head of the department of surgery, retired July 1, but will remain at the university as Thomas D. Jones professor of surgery. Dr. Lester R. Dragstedt will succeed Dr. Phemister as head of the department of surgery. The Joseph Bolivar DeLee professorship of obstetrics has been established under an endowment set up by the Mothers' Aid of the Chicago Lying-In Hospital. Dr. M. Edward Davis has been appointed to the chair.

Construction of a $1,250,000 ion accelerator building, first unit in the $10,000,000 program for basic research in nucleonics, began July 9. This laboratory will house a 100 million volt betatron and two cyclotrons of the most modern construction. One problem in prospect is a study of the effects of positive ion beams on deep-seated cancer. Among the scientists at the university who will work in the laboratory are Samuel K. Allison, who participated in the first atomic bomb explosion in New Mexico; Enrico Fermi, Nobel prize winner, who was the first to achieve a controlled nuclear chain reaction; Harold C. Urey, discoverer of "heavy water" and Nobel prize winner; Arthur J. Dempster, discoverer of U-235; Edward Teller and Willard F. Libby, who with associates "lately discovered radiocarbon in all living matter"; Raymond E. Zirkle, Dr. Austin M. Brues, Kenneth S. Cole and Konrad E. Bloch. Dr. Paul C. Hodges, roentgenologist, will have charge of the medical aspects of the program.

Dr. Lowell T. Coggeshall, professor and chairman of the department of medicine, has been appointed dean of the division of biological sciences, succeeding R. Wendell Harrison, Ph.D., who has been appointed vice president of the university.

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University of Louisville School of Medicine

The campaign to raise a rural medical scholarship fund of $100,000 has exceeded its goal by more than $50,000. The campaign was sponsored by the University and the Kentucky State Medical Association. It was aimed to aid med-

ical students by lending money for tuition on their pledge that they practice for a while in Kentucky rural areas.

Plans for a convalescent home for crippled children were announced as a memorial to Dr. W. Barnett Owen, professor of orthopedic surgery, who died February 23. Dr. Irvin Abell, professor emeritus of the School of Medicine, is chairman of the W. Barnett Owen Committee, which hopes to raise $150,000 to cover the cost of the home to be built on the grounds of Kosair Crippled Children's Hospital in Louisville.

Grants totaling $49,304 for three departments have been received from the U. S. Public Health Service to provide funds for research and expansion of present facilities. A division of psychosomatic medicine in the school is to be organized, and two fellowships of $3,600 in that field will be offered. The grant will make possible the addition of one associate professor with special training, one society worker, one psychologist and two part time specialists. The department of anatomy received $9,960 for a study of toxemia of pregnancy in guinea pigs. In the department of phrmacology a $7,344 grant will be used to study the peptic ulcer problem.

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University of Illinois
College of Medicine

Dr. William H. Welker, head of the department of biological chemistry, has announced his retirement from the faculty. Dr. Welker will complete his 34th year on the university staff with the close of the 1946-47 school year. He joined the faculty as an assistant professor of biological chemistry in 1913. He currently serves as chairman of the committee on graduate study, and is a member of the executive committee of the graduate school. Following his retirement from actual teaching, Dr. Welker plans to complete research in cancer which he is currently conducting. He also will serve as consultant to the university's allergy unit, to provide comprehensive training for physicians in the field of allergy.

Four other members of the faculty will also retire: Dr. Dietrich Klemptner, associate in medicine; Dr. Herman L. Kretchmar, clinical professor of urology; Dr. Charles Phifer, clinical professor of surgery, and Dr. Kellogg Speed, clinical professor of surgery. Dr. William F. Hughes, Jr., of Indiana University, has been appointed professor and head of the department of ophthalmology.

Dr. Paul A. Campbell, Rush assistant professor of otolaryngology, has been awarded the decoration of the Royal Order of Sweden "for outstanding research in aviation medicine."

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University of Kansas
School of Medicine

The University of Kansas Hospitals are now to be known as the University of Kansas Medical Center by action of the Board of Regents.

Dr. Donald L. Rose succeeds Dr. Gordon Martin as assistant professor of physical medicine and director of the department. He was Baruch Fellow in Physical Medicine at the Massachusetts General Hospital.

Promotions: Dr. G. M. Tice, professor of radiology; Dr. Mahlon H. Delp and Dr. L. E. Wood, associate professors of medicine; Drs. J. V. Bell, F. I. Ridge, and Dr. J. H. Danglade, assistant professors of medicine; Dr. Rex I. Dively, assistant professor of surgery.

Dr. Nelse F. Ockerblad, professor of clinical surgery and head of the department of urology, has reached the retirement age but will continue to teach. He is succeeded by Dr. William L. Valk.

An applied basic science course was started July 1. It is designed primarily for resident physicians in Veterans Administration Hospitals. The course will be given from July to January each year.

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Long Island College of Medicine

Dr. Robert T. Barber has retired from active teaching duties in surgery. He has been made an emeritus professor. A de-

partment of psychiatry has been established under the direction of Dr. Howard W. Potter. Dr. Harvey B. Matthres has been appointed professor of clinical obstetrics and gynecology. Drs. S. Potter Bartley and Thomas W. Brennan have been named clinical professors of surgery. To further the interchange of medical knowledge between North and South America, Dr. Arthur W. Grace, professor of clinical dermatology and syphilology, will make a seven weeks' lecture tour of South America, sponsored by E. R. Squibb & Sons.

Dr. Howard W. Potter will head the new department of psychiatry just established. Dr. Robert F. Barber has been named emeritus professor of clinical surgery.

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Stanford University
School of Medicine

Dr. Hans Barkan, clinical professor of ophthalmology and chief of the division, becomes professor emeritus September 1. He will be succeeded by Dr. Alfred E. Maumenes of the Wilmer Institute of Baltimore. He will be a professor of surgery assigned to ophthalmology. His service will not begin until September, 1948. In the meantime, Dr. Dohrmann Kaspar Pischel, clinical professor of ophthalmology, will act as chief of the division.

The ninth series of postgraduate medical courses for practicing physicians will be given September 8-12, 1947, inclusive. The registration fee is $50. The eight courses offered will cover oncology, internal medicine, fractures and orthopedic problems, general problems in pediatrics, general surgery, general problems in surgical specialties, management of diabetes and obesity, neurology and psychiatry.

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Ohio State University
College of Medicine

Dr. Arthur M. Culler has been appointed chairman of the department of ophthalmology, succeeding the late Dr. Albert D. Frost. Dr. Claude S. Perry, who has served as acting chairman since Dr. Frost's death in 1945, will continue as associate professor. Dr. Jacob J. Jacoby, of the University of Chicago, has been appointed associate professor of surgery and director of the division of anesthesia in the University Hospital.

A department of radiology has been established, headed by Dr. Hugh J. Means and staffed by 14 associates. Instruction will be provided for graduates and undergraduates. Research will be fostered. Additional cancer research will be undertaken with the appointment of Dr. Hans G. Schlumberger to the staff of the department of pathology. In another research project, Dr. George Shinowara of the pathology department is investigating the isolation of enzymes from blood and other organs which are destroyed by cancer and the relation of these enzymes to various forms of the disease in humans.

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University of Cincinnati
College of Medicine

Dr. Albert B. Sabin, professor of research pediatrics, attended the fourth International Congress on Microbiology held in Copenhagen, Denmark, in July. Dr. Louis G. Hermann, associate professor of surgery, spent August in France teaching in three universities on recent advances in surgery. He will also visit the University of Strasbourg and attend a meeting of the Royal College of Surgeons in London, England, in Belgium and in Paris. Dr. Katharine Dodd, associate professor of pediatrics, and Dr. Samuel Rapoport, assistant professor of pediatrics, are in Japan on an assignment of the U. S. Public Health Service. They will investigate a disease known as "ekiri."

Appointments: Dr. Leon Goldman, professor of dermatology and syphilology and director of the department at the Cincinnati General Hospital; Dr. Stanley Garber, professor of obstetrics and director of the hospital's department of obstetrics; Dr. Donald J. Lyle, professor of ophthalmology and director of the hospital's department of ophthalmol-

ogy; Dr. Henry M. Goodyear, professor of otolaryngology and director of the hospital's department of laryngology. Dr. Charles D. Aring, formerly associate professor in neurology at the University of Cincinnati College of Medicine, has been appointed the new Albert Barnes Voorheis professor of neurology and director of neurology at the Cincinnati General Hospital, effective September 1.

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University of Colorado
School of Medicine

A two-week course in chronic chest diseases, with special emphasis on tuberculosis, was inaugurated July 28. The course will be taught by thirty-five members of the faculty, three physicians from the Denver County Medical Society, and nine visiting faculty members.

The Medical Center of the University of Colorado announces that it is in a position to place ten or twelve veteran medical officers in good residencies as a preparation for general practice. The term of the service is one year. Three hospitals are participating in the program. A grant from the W. K. Kellogg Foundation will provide a coordinator for the program. Inquiries as to these opportunities should be addressed to Dr. Robert S. Liggett, assistant dean of the school of medicine.

Dr. Leighton L. Anderson, director of the outpatient department of the Colorado General Hospital, has been appointed clinical director of the Medical Center.

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Yale University
School of Medicine

Dr. C. N. Hugh Long, Sterling Professor of physiological chemistry, has been named dean to succeed Dr. Francis G. Blake who has retired from the deanship but will remain as professor of medicine.

Dr. Stanhope Bayne-Jones, former dean and professor of bacteriology of the Yale University School of Medicine, has been appointed the first president of the Joint Administrative Board of the New York Hospital-Cornell Medical Center. The joint board is made up of representatives of New York Hospital and of Cornell University. As president Dr. Bayne-Jones will be responsible for the formulation of policies and an overall program for the center. Dr. M. C. Winternitz has been appointed acting director of the Jane Coffin Childs Fund for Medical Research to succeed Dr. Bayne-Jones, retired.

Dr. Herbert Thomas, associate professor of obstetrics and gynecology, has been appointed professor and chairman of the department.

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Northwestern University
Medical School

Dr. J. Roscoe Miller, dean, was recently made president-elect and chairman of the Council of the Chicago Medical Society.

Dr. Vincent J. O'Connor, associate professor of urology, has been appointed professor and head of the department, succeeding Dr. Louis E. Schmidt, now professor emeritus.

A national center for medical research in the field of nutrition and metabolism is to be established, headed by Dr. Tom Spies, well known authority on nutrition, now associate professor of medicine in the University of Cincinnati. He will become professor of nutrition and metabolism and chairman of this new department. The Spies Committee for Clinical Research has guaranteed $150,000 a year for five years to defray the expenses of this department.

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Medical College of Alabama

Dr. Charles A. Thigpen, Montgomery, has presented to the college $10,000 to be used to convert one floor in the Jefferson Hospital into an ophthalmic

hospital, with operating rooms, museum, conference rooms and beds for patients. The gift is in memory of his nephew, Dr. Job T. Cater, who was associated with him in practice until his death in 1940.

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Harvard Medical School

Dr. Duncan E. Reid has been appointed William Lambert Richardson professor of obstetrics to succeed Dr. Frederick C. Irving who resigned December, 1946.

Dr. Monroe D. Eaton, director of research laboratory of the state deparment of public health at the University of California, has been appointed associate professor of bacteriology and immunology.

Dr. David D. Rutstein, New York, has been appointed professor of preventive medicine, to succeed Dr. John E. Gordon.

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Southwestern Medical College

A degree of Master of Medical Art, the first awarded by any university, was conferred on Miss Patricia O'Neill of the medical art department headed by Lewis Waters, who has developed the department of medical art and visual education to a unique place in medical education.

Mr. Rae E. Skillern, president of Skillern & Sons, Inc., has given the Southwestern Medical Foundation a gift of $100,000 for the construction of a student center building as a memorial to his father.

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Johns Hopkins University
School of Medicine

The school has received a gift of $1,000,000 from Undersecretary of State and Mrs. Will L. Clayton for medical research. The terms of the gift permit it to be used for any research regarded as most important to the department of medicine "in the present state of development of the medical sciences."

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Duke University
School of Medicine

Promotions: Dr. L. D. Baker, professor of orthopaedics; Dr. J. L. Callaway, professor of dermatology and syphilology; Dr. Robert Graves, professor of neurology; Dr. Barnes Woodhall, professor of neurosurgery; Dr. Philip Handler, associate professor of biochemistry; Dr. J. S. Harris, associate professor of pediatrics; Dr. B. Black-Schaffer, assistant professor of pathology; Dr. D. G. Sharp, assistant professor of biophysics in experimental surgery and biophysicist to Duke Hospital.

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Woman's Medical College

At the 95th annual commencement held June 6th, Dr. Louise Pearce, president of the Board of Corporators, announced plans for the Expansion Program of the College which will be completed by 1950, when the college will celebrate the centennial of its founding. By that time the Woman's Medical College plans to raise a fund of $4,000,000 for general endowment, and for physical expansion of the college and clinical facilities. Dr. Catharine Macfarlane of the Class of 1898 will head the Expansion Committee.

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University of Minnesota
Medical School

Plans have been formulated to establish a professorship which will direct research in heart diseases and rheumatic fever of children. The American Legion of the State of Minnesota is embarking on a campaign to secure $500,000 from its members to maintain this chair as a memorial to veterans of World Wars I and II.

University of Arkansas
School of Medicine

Dr. Henry Chenault, dean, has been appointed vice president of the University in charge of medical affairs. Dr. Benjamin Wells, professor of medicine, has been appointed dean and Dr. W. Langston, professor of anatomy, has been appointed associate dean.

A plan has been advanced for the revision and expansion of the staff and departments of the medical school with the employment of full time personnel. All divisions will have permanent department heads and staffs who will continue to use the services of part time specialists. The reorganization will allow for the integration of premedical and medical education programs. Staff appointments and policies will be approved by the university president in contrast to the situation in past years, in which the medical school has been practically autonomous. Other objectives of the program include the development of postgraduate teaching in various specialties of medicine and surgery, a postgraduate training program coordinated with the medical school leading to advanced degrees in basic sciences related to medical and surgical sciences, a cooperative program of specialty training in hospitals throughout the state and a nurses training school where students may obtain a bachelor degree in nursing.

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West Virginia University
School of Medicine

A movement is again on foot which contemplates converting this two year school into a full four year school. A survey of facilities, financial, clinical and available teaching personnel will be made in the near future to assist the authorities in devising plans looking toward the establishment of a strong medical school in the State. At present, the university has a contract with the Medical College of Virginia which provides for taking over as juniors such of the West Virginia students as wish to participate in the plan. The State pays for their tuition and incidentals.

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George Washington University
School of Medicine

Dr. William V. Stanbro of Washington University has been appointed assistant professor of radiology and chief roentgenologist at the George Washington University Hospital.

The school is operating the largest research program in its history under grants totaling $150,000. One grant of $40,000 is for research in anesthesia and the use of penicillin and streptomycin.

Promotions: Dr. James W. Watts to a full professorship in neurologic surgery; Dr. Clayton B. Ethridge, associate clinical professor in medicine; Dr. John H. Lyons, clinical professor of surgery; Dr. Henry Rappaport, professorial lecturer of pathology; Ira R. Telford, Ph.D., associate professor of anatomy, and Carlton R. Treadwell, Ph. D., associate professor of biochemistry.

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Emory University
School of Medicine

New Appointments: Dr. Marion Hines, professor of experimental anatomy; Dr. Josef Szepsenwol, assistant professor of anatomy; Dr. Guy Darrell Ayer, Jr., assistant professor of pathology; Dr. Arthur P. Richardson, professor of pharmacology and chairman of the department. Dr. Marion O. Pruitt has been promoted from associate in surgery to assistant professor of clinical surgery (proctology).

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University of Tennessee
College of Medicine

Summer Staff Appointments: John W. Barnard, University of Missouri, visiting associate professor of anatomy;

James H. Leathem, Rutgers University, visiting associate professor of anatomy; Ray J. Nichols, University of Mississippi, visiting professor of anatomy; J. R. Leonards, Western Reserve, visiting assistant professor of biochemistry; Edwin P. Hiatt, University of North Carolina, visiting associate professor of physiology; S. C. Wang, Columbia University, visiting assistant professor of physiology; Robert A. Woodbury, University of Georgia, visiting professor of pharmacology.

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University of Virginia
Department of Medicine

An anonymous donor has provided funds for the establishment of four scholarships with a stipend of $500 each to be named for the late Harry Taylor Marshall, Walter Professor of Pathology from 1908 to 1929; James Alexander Waddell, professor of pharmacology from 1917 to 1945; William Edward Bray, professor of clinical pathology, and Harvey Ernest Jordan, dean and professor of anatomy.

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Louisiana State University
School of Medicine

Ralph E. Brauer, Ph.D., Boston, has been appointed assistant professor of pharmacology. He has received $5,000 from the National Institute of Health for research on the effect of liver injury on plasma proteins.

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University of Oregon
Medical School

Dr. William K. Livingston, of Portland, has been appointed professor of surgery to succeed the late Dr. Thomas M. Joyce. He will also be head of the department. He was guest professor of anatomy at New York University College of Medicine.

Western Reserve University
School of Medicine

The school has received a ten year grant of $250,000 from the Brush Foundation for the study of the effect of infectious diseases on infants and children by Dr. John H. Dingle, head of the department of medicine. Dr. Dingle will be assisted by Drs. George F. Badger, associate professor of biostatistics, and Dr. Richard G. Hodges, Chas. H. Rammelkamp, Jr., and Otto E. Feller, assistant professors.

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Indiana University
School of Medicine

Dr. John D. Van Nuys, executive secretary of the interim committee since the resignation of Dean Gatch, has been appointed dean. John J. Mahoney, Ph.D., formerly on the University of Illinois faculty, has been appointed assistant to the dean and assistant professor of experimental medicine.

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University of Buffalo
School of Medicine

One-half of the centennial fund quota of $3,000,000 will be used for a new building ($500,000) and for endowment ($1,000,000). The building is to house larger laboratories for instruction and research, an adequate library and medical museum.

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Cornell University
Medical College

Cornell has established a professorship of cancer with an annual endowment of $15,000 for five years. The sum represents the first allocation of funds from the 1947 campaign of the New York City Committee of the American Cancer Society.

Wayne University
College of Medicine

A life sized portrait of Dr. Frederick G. Buesser, professor of clinical medicine, was presented to the University by the faculty. Dr. Buesser has been a member of the faculty for many years.

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University of Rochester
School of Medicine

Dr. Elmer Stotz, of Cornell University, has been appointed professor of biochemistry, to succeed Dr. Walter R. Bloor.

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University of South Dakota
School of Medicine

Dr. H. Grant Skinner has joined the faculty as assistant professor of pharmacology.

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University of Oklahoma
School of Medicine

Dr. Vernon D. Cushing, resident in pathology, has been appointed director of the health service of the medical school and the University Hospital and instructor in medicine.

University of Washington
School of Medicine

Dr. Walter B. Seelye, Seattle, has been appointed clinical professor of pediatrics and acting executive of the department.

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University of California
Medical School

The university has purchased 90 acres of land for the contemplated $30,000,000 expansion of the Medical Center by means of a new medical sciences and hospital building.

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University of Miami

The trustees of the University of Miami, Coral Gables, Florida, have authorized the establishment of a medical school to be in operation in October. Only a freshman class will be admitted.

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Temple University
School of Medicine

Dr. Alexander J. Steigman has resigned from the department of pediatrics to join the National Research Council as senior fellow in pediatrics.

General News

Army Builds Medical Center

What is planned to be the greatest medical research center in the world will be built at Forest Glen, Maryland, by the Engineers for the Surgeon General. The center will be equipped to anticipate and meet the medical problems of the future as well as to cope with those of the present. The initial cost is estimated to be approximately $40,000,000. Officially designated as the Army Medical Research and Graduate Teaching Center, the project will consist of a 1,000-bed general hospital capable of expansion to 1,500 beds; the Army Institute of Pathology building; the Army Medical Museum and Center Administration building; Central Laboratory Group buildings and the Army Institute of Medicine and Research; a working library; animal farms, quarters for the staff and other buildings are included in the plan.

* *

Adolf Meyer Laboratory of Neurology

The medical advisory board of the Seton Institute and the Sisters of Charity of St. Vincent de Paul, Baltimore, have announced the gift from Dr. Adolf Meyer, Baltimore, of his entire personal collection of neuroanatomic and neuropathologic material, consisting of some sixty large boxes of serial sections from crucial human case material as well as material of a comparative nature. Included in the gift is an exhaustive card index file of neurologic subjects. The institute plans to use this material as the nucleus about which to develop a laboratory, which will be called the Adolf Meyer Laboratory of Neurology, for the study of neuroanatomy, neurophysiology and neuropathology. The material will soon be in available form for the instruction of candidates for the American board examinations in neurology. Seton Institute, the former Mount Hope Retreat, provides facilities for the training of psychiatric interns and for three years of postgraduate service required of the specialists certified by the American Board of Psychiatry and Neurology. Dr. Wendell S. Muncie, Baltimore, is chairman of the medical advisory board.

* *

Training in Anesthesiology

The board of directors of the American Society of Anesthesiologists, Inc., adopted a resolution recommending (1) the establishment of departments of anesthesiology in all medical schools and hospitals under the direction of a doctor of medicine actively engaged in the practice of anesthesiology and (2) that the department of anesthesiology bear the same relationship to the medical school and/or hospital that is borne by other medical departments of the institution. The society also stated its disapproval of (1) the training of persons other than doctors of medicine in anesthesiology for the assumption of responsibility in the care of patients where it may be necessary to exercise medical judgment and particularly of the issuance of certificates for such training by its members and (2) the existence of departments of anesthesiology in hospitals and/or medical schools under the direction of persons other than doctors of medicine or under the nominal direction of doctors of medicine not actively engaged in the practice of anesthesiology.

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Fellowships in Ophthalmology

The Heed Ophthalmic Foundation is offering a limited number of fellowships for advanced training in ophthalmology. Only those who have completed a min-

imum of two years specialized study in ophthalmology are eligible. United States citizenship is required.

Application blanks and additional information may be obtained from the Secretary of the Board of Directors, M. Hayward Post, M.D., 520 Metropolitan Bldg., 508 N. Grand Blvd., St. Louis 3, Missouri.

The Heed Ophthalmic Foundation has given its first fellowship, to be known as the Gradle Fellowship, to Dr. John C. Poore, now finishing his residency at the University of California, and the second to Dr. Herbert B. Shields, who is in a like position at Washington University, St. Louis.

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Peiping Union Medical College

The new board of trustees of the China Medical Board, Inc., which has been organized since termination of all relationship between the board and the Rockefeller Foundation, announced plans July 1 for reopening the Peiping Union Medical College. In a statement the board emphasized the objectives of the assumption of responsibility by the Chinese faculty and staff of the college and development in China of financial support. Although the Peiping Union Medical College and the China Medical Board, Inc., are separate and distinct corporate entities, the board owns the college buildings and equipment, which it leases for a nominal sum, but the trustees of the college are responsible for its administration and educational policy. The board will continue to support the college and its program.

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Training Country Practitioners

The Cook County Hospital, Chicago, is training 58 graduates to be country practitioners. They will serve a two year internship. They will practice in small communities where the need for physicians is great.

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Research in Multiple Sclerosis

Contribution of $25,000, made by Mrs. Percy S. Straus, New York, has been announced by the Association for Advancement of Research on Multiple Sclerosis, Inc. With this contribution the initial goal of $100,000 for research on multiple sclerosis has been met. The first grant made by the association was for $64,350 for work in the field of allergy.

Book News

Gastritis

By Rudolf Schindler, M.D., Clinical Professor of Internal Medicine (Gastroenterology), College of Medical Evangelists. Grune & Stratton, New York. 1947. Price, $8.75.

Almost 500 pages devoted entirely to the subject of gastritis by a man who has made a special study of this disease since 1920. Part I is a brief discussion of history and definitions; Part II is the pathological part; Part III is the clinical part; Part IV is a discussion, in summary, of 55 cases; Part V is quite an extensive bibliography and Part VI is given over entirely to illustrations numbering 96, a few in color, of the gastric mucosa in various disease states, the remainder being photomicrographs of histologic specimens. This is a rather unique arrangement but far from being objectionable.

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Building a Course Within a Professional Curriculum

By Archer Willis Hurd, Bureau of Educational Research and Service, Medical College of Virginia, Richmond, 1947. Price, 75c, plus 4c postage.

This is the fourth monograph in the field of nursing education prepared by Dr. Hurd. Its treatment is related in point of view and emphasis to other phases of nurse education previously covered.

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Surface and Radiological Anatomy

By A. B. Appleton, M.D., Professor of Anatomy, University of London, and Director of Anatomy in the Medical School of St. Thomas Hospital, London; W. J. Hamilton, M.D., Regius Professor of Anatomy in the University of Glasgow, and G. Simon, M.D., Demonstrator of Radiological Anatomy in the Medical College of St. Bartholomew's Hospital, London. Ed. 2. The Williams & Wilkins Company, Baltimore. 1947. Price, $7.

The interest in the study of living anatomy is steadily increasing—as it should. After all, that is the anatomy in which the practitioner should be interested and of which he should have full and complete knowledge. He must know what lies under his fingers and in his field of vision. The student will find this book a great aid in familiarizing him with this important phase of anatomy. It is of convenient size, concise but complete and exceedingly well illustrated, which will give the correct mental picture of whatever area of the body is being studied.

Textbook of Physiology

By William D. Zoethout, Ph.D., Professor Emeritus of Physiology in the Chicago College of Dental Surgery (Loyola University), and W. W. Tuttle, Ph.D., Professor of Physiology, College of Medicine, State University of Iowa. Ed. 9. The C. V. Mosby Company, St. Louis. 1947. Price, $4.75.

Any textbook which has survived for more than 30 years, must have real teaching value. In the present edition more than one-half of the text has been rewritten, especially in the chapters dealing with respiration and the various phases of metabolism and the nervous system, new topics are discussed fully, some new illustrations have been added and many old ones have been redrawn. Thus the work is brought fully up to date. Students will find this handy little text very useful in their studies in physiology, concise and written in an easily comprehended style.

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Diseases of the Nervous System

By F. M. R. Walshe, M.D., Physician in Charge of the Neurological Department, University College Hospital, London. Ed. 5. The Williams & Wilkins Company, Baltimore. 1947. Price, $4.75.

A book adapted to the needs of the student; complete; concise, easily comprehended and of convenient size. An annoying fault of many textbooks today is their large size, which demands a rest on which the book can be placed if it is to be read easily. The present work can be held in one hand.

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Pye's Surgical Handcraft

Edited by Hamilton Bailey, Surgeon Royal Northern Hospital, London. Ed. 15. The Williams & Wilkins Company, Baltimore. 1947. Price, $7.

A manual of surgical manipulations, minor surgery, and other subjects connected with the work of surgical dressers, house surgeons and practitioners. Would that every medical student, intern and resident had a copy of this book constantly before him. It would be a great aid to him in his daily work. A book which has survived for 15 editions (the first edition was published in 1884) must have value. It is not the work of one man today, but of many men and women of great experience in this field. The book is well illustrated by nearly 800 drawings and photographs. It is a veritable gold mine of information which every practitioner of medicine should have at his fingers' ends.

A History of the American Medical Association: 1847 to 1947

By Morris Fishbein, M.D., Editor, Journal of the American Medical Association. The W. B. Saunders Company, Philadelphia. 1947. Price, $10.

The book is published in recognition of the 100th anniversary of the American Medical Association, celebrated at the Centennial Session in Atlantic City, June 9-13, 1947. The book is written for a general audience as well as for the medical profession. It reviews the rise of the Association as a great organization and has reference particularly to the campaigns to raise the standard of medical education, to eliminate quackery, to improve industrial health, to eliminate nostrums and frauds in the medical field, and to provide a wide distribution of a high quality of medical care.

Biographies of the presidents of the Association are written by Dr. Walter L. Bierring. This work is a notable contribution to the history and development of American medicine under the stimulus of all those men who contributed so much to the endeavor. It is most interesting reading and a most notable contribution to American medicine. The contributors to this volume should be congratulated on their fine efforts.

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Curare: Its History, Nature and Clinical Use

By A. R. McIntyre, Ph.D., M.D., Professor of Physiology and Pharmacology, University of Nebraska College of Medicine. The University of Chicago Press, Chicago. 1947. Price, $5.

This book tells the complete history of curare for the first time. At one time only an arrow poison used by the natives of certain South American jungles, it has become a valuable therapeutic agent in the control and prevention of trauma in shock therapy and as an adjuvant in anesthesia. The available standardized preparation is Intocostrin. The author emphasizes that much more experimentation is needed before the full therapeutic use and value of this drug becomes known.

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Bacteria in Relation to Domestic Science

By C. E. Dukes, M.D., D.P.H., Lecturer in Bacteriology at King's College for Household and Social Science, London. Oxford University Press, London, New York. 1947. Price, $3.75.

While this handy little book is written primarily for lay-persons, medical students will find it very interesting reading and helpful in comprehending more easily the more weighty bacteriologic studies to be taken up in medical school.

A Manual of Otology, Rhinology and Laryngology

By Howard Charles Ballenger, M.D., Associate Professor and Acting Chairman of the Department of Otolaryngology, Northwestern University Medical School. Ed. 3. Lea & Febiger, Philadelphia. 1947. Price, $4.50.

The work is based on the larger and more comprehensive text, Ballenger's Diseases of the Nose, Throat and Ear. In preparing this edition, the text has been thoroughly revised and several important additions have been incorporated. They include a new chapter on Headaches and Neuralgias of the Face and Head and general amplifications of other portions of the text. New illustrations have been added, many of them pertaining to anatomy, as the comprehension of this subject is basic to the proper understanding of the clinical manifestation of diseases and disorders of the nose, throat and ear.

The book is well written and its concise but ample explanations of pathology and its numerous illustrations give a clear conception of the subject.

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1946 Atlas of Cardiovascular Diseases

By Irving J. Treiger, M.D., Assistant Professor of Medicine, College of Medicine, University of Illinois. The C. V. Mosby Company, St. Louis. 1947. Price, $10.

Correlation of clinical electrocardiography and cardiac roentgenology with clinical history and autopsy findings. Divided into six parts: Normal heart; rheumatic disease; arteriosclerotic heart disease; hypertension; syphilitic heart disease and congenital anomalies. Illustrated with 69 plates; 244 illustrations, 11 in color. A splendid piece of work and a valuable one for the practitioner.

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Roentgen Intrpretation

By George W. Holmes, M.D., Professor of Roentgenology Emeritus, Harvard Medical School, and Laurence L. Robbins, M.D., Associate in Radiology, Harvard Medical School. Ed. 7. Lea & Febiger, Philadelphia. 1947. Price, $7.

The subject matter has been thoroughly revised and brought up to date and references to current medical literature have been selected to give additional information. The outstanding characteristics of this text are its clearness and conciseness. It covers the entire body, part by part, and indicates how many processes may be revealed by the roentgen-ray. It points out the pitfalls in diagnosis and it illustrates the various lesions and deformities. Here will be found the essentials of correct interpretation.

Libido and Delusion

By Louis S. London, M.D., Washington, D. C. Ed. 2. Mental Therapy Publication, Washington, D. C. 1947. Price, $3.50.

This book is divided into three parts and eight chapters. The first chapter contains various theories of the libido and the author's theory. The next five chapters contain case material from the author's own practice. The psychopathology of delusions and eight analytic sessions of two borderline cases are discussed in the final two chapters.

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Methods of Diagnosis

By Logan Clendening, M.D., late Professor of Clinical Medicine and History of Medicine, and Edward H. Hashinger, M.D., Professor of Clinical Medicine, University of Kansas School of Medicine. The C. V. Mosby Company, St. Louis. 1947. Price, $12.50.

It is difficult to say much about a text on physical diagnosis. This one is good. Students will find it helpful especially in their clinical clerkships.

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Paravertebral Block: In Diagnosis, Prognosis and Therapy; Minor Sympathetic Surgery

By Felix Mandl, M.D., Professor of Surgery, Hadassah University Hospital, Jerusalem. Translated by Gertrude Kallner, M.D., with a foreword by Max Thorek, M.D., Professor of Surgery, Cook County Graduate School of Medicine. Grune & Stratton, New York. 1947. Price, $6.50.

The title of this book indicates the ground covered. It is a complete coverage of the indications for and use of paravertebral block.

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Forensic Medicine

By Keith Simpson, M.D., Lecturer in Forensic Medicine, Guy's Hospital, London. The Williams & Wilkins Company, Baltimore. 1947. Price, $4.50.

It is a pity that American medical students too seldom are given any teaching in forensic—or what was once termed in our curriculum, when the subject was taught—legal medicine or medical jurisprudence. Every physician would do well to know something about this subject. This little book will serve as an excellent guide for laying out a course of instruction. It need not use up many hours, but it can cover some very important subjects in a comparatively few hours. Of course, it would be a lecture course, given by a lawyer familiar with the medical aspects of the law, or a physician who is also a lawyer or a man with legal training.

School Health and Health Education: With Special Consideration of the Teacher's Part in the School Health Program

By C. E. Turner, Dr. P. H., Professor of Public Health Emeritus, Massachusetts Institute of Technology. With the editorial assistance of C. Morley Sellery, M.D., Director of Health Services, Los Angeles City Schools. The C. V. Mosby Company, St. Louis. 1947. Price, $3.50.

Prepared for teachers and school health personnel in training and in service, this new book presents the educational aspects of the school health program and the personnel relationships involved. The organization, methods and procedures in health education are presented in some detail. The activities of physicians, nurses, dentists, dental hygienists, physical educators, and others who contribute to the health program of the school are indicated in such a way as to show administrative relationships and educational opportunities without a discussion of the respective professional techniques involved in medical, nursing, dental, physical education, and other professional services.

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Signs and Symptoms: Their Clinical Interpretation

Edited by Cyril Mitchell MacBryde, M.D., Assistant Professor of Clinical Medicine, Washington University School of Medicine. J. B. Lippincott Company, Philadelphia. 1947. Price, $12.

This excellent book will help getting the patient to tell his own story and gives the basis for analysis and interpretation of the complaints made by the patient. It teaches the art of history taking—and that is an art—and symptom evaluation without losing sight of the patient as an individual. The parallel column arrangement makes for easy reading.

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Histopathology of the Ear, Nose and Throat

By Andrew A. Eggston, M.D., Clinical Professor of Pathology, New York University College of Medicine, and Dorothy Wolff, Ph.D., Research Investigator, Endaural Hospital. The Williams & Wilkins Company, Baltimore. 1947. Price, $18.

This book needs a good support when it is consulted. It is very large and very heavy. But it gives full coverage of the subjects discussed. It presents more than 500 illustrations and 28 color plates. The bibliography is very extensive. Is that necessary? It does show to what lengths the authors went to have full coverage, but it is doubtful whether any reader will consult any of these thousands of references. For the men working in that field it is a good book to have for study and reference.

Practical Anaesthetics

By J. Ross Mackenzie, M.D., Lecturer on Anaesthetics, University of Aberdeen; with a foreword by W. C. Wilson, M.B. Regius Professor of Surgery, University of Edinburgh. Ed. 2. The Williams & Wilkins Company, Baltimore. 1947. Price, $3.

A very useful guide for the medical student.

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Concise Anatomy

By Linden F. Edwards, Ph.D., Professor of Anatomy, Ohio State University. The Blakiston Company, Philadelphia. 1947. Price, $5.50.

A study of anatomy from the regional point of view designed to meet the needs of the student in a variety of ancillary fields such as physical therapy, occupational therapy, embalming, nursing, dental hygiene, physical education. The aim is to present a clear, well illustrated study of basic principles for a working knowledge of the human body. The book is not large. It is well illustrated.

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Water Supply and Sewerage

By Ernest W. Steel, C.E., Consulting Engineer lo Instituto Nacional de Obras Sanitarias, Venezuela. Ed. 2. McGraw-Hill Book Company, New York. 1947. Price, $6.

Textbook of Microbiology

By Kenneth L. Burdon, Ph.D., Professor of Bacteriology and Immunology, Baylor College of Medicine. Ed. 3. The Macmillan Company, New York. 1947. Price, $3.50.

A complete revision and rearrangement has been made which makes the text more sequential and more easily understood by the student. More references to current bacteriological literature are made—which is questionable as having value for the undergraduate medical student who is pressed for time. The text is divided into four parts: I.—Elements of Microbiology; II.—Methods of destroying microorganisms and of controlling the spread of communicable diseases —sources and modes of infection; III.—Infection and resistance; IV.—Microbiology of important infectious diseases.

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Anatomy and Physiology for Students of Physiotherapy, Occupational Therapy and Gymnastics

By C. F. V. Smout, M.D., Assistant Professor of Anatomy, University of Birmingham, and R. S. McDowall, M.D., Professor of Physiology, University of London. Ed. 2. The Williams & Wilkins Company, Baltimore. 1947. Price, $8.

Even the medical student will find this book helpful.

New (7th) Edition

ROENTGEN INTERPRETATION

By GEORGE W. HOLMES, M.D., and LAURENCE L. ROBBINS, M.D.

Clinical Professor of Roentgenology Emeritus, Harvard Medical School. — Associate in Radiology, Harvard Medical School.

New (7th) edition, thoroughly revised, published 1947
Octavo, 398 pages, with 266 illustrations. Fabrikoid, $7.00

The outstanding characteristics of this text are its clearness and conciseness. It covers the entire body, part by part, and indicates how many processes may be revealed by the roentgen-ray. It points out the pitfalls in diagnosis and it illustrates the various lesions and deformities. Here will be found the essentials of correct interpretation. The illustrations are well chosen and are produced with unusual clarity, owing to the high quality of paper used throughout. This work will continue to serve as an excellent text for students and practitioners who wish a concise ready reference covering the fundamentals of roentgen diagnosis.

Washington Square **LEA & FEBIGER** Philadelphia 6, Pa.